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BULLETIN

OF

THE NEW YORK ACADEMY OF MEDICINE

APRIL, 1929

INSTITUTED 1847

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EDITORIAL

MEDICINE AS AN AGENCY IN THE ADVANCEMENT OF SCIENCE, ART AND CIVILIZATION[1]

It is agreed by most recent thinkers that apart from disease, injury or unforeseen disaster, the main source of dissatisfaction with life is to be sought in some sort of mental or spiritual conflict, which as Aristotle noted long ago, is the leading motive in the human tragedy. Orestes, Œdipus, Hamlet, Don Quixote, Faust, Tristan, Wotan, Hernani, Julian Sorel, Anna Karenina, all illustrate this internecine warfare between the natural human and the hidden *alter ego,* of which the Freudian or Adlerian interpretation is accepted as profound in so far as it is reasonably true to human nature, in other words, not made too universal or too exclusively sexual in application. One of the most familiar forms of the proposition is the biological theorem: Adaptation to environment spells survival, if not success; failure or inability to adapt means conflict, defeat, extinction, or in plain English, to go out of business. This, in Tilney's reading, goes back to the initial struggle of the primeval anthropoid to emancipate himself from the status of an instinctive lower animal to that of a rational cerebrating being, by development of the anterior lobes at the expense of the brain-stem. But, in the ordinary relations of life, the generalization seems a bit glittering, since, apart from unavoidable disease or disaster, most people do adapt themselves to environment in the long run or else get out of it when unsuitable (the

[1] Substance of a lecture read at the Mayo Clinic (November 16, 1928) and elsewhere.

index of strength), if not compelled to get out of it by their fellows (the sign of weakness). Apart from the solutions proposed by such great religious systems as Buddhism or Christianity, a simple and lucid statement of the problem was made by the Greek philosopher Heraclitus, when he said that, "Though reason is accessible to all, most people, it seems, incline to live according to their own notions." [2] This sounds trite, yet is deeper than might at first sight appear. Its breadth and depth may, in fact, be gauged by contrasting the very first sentences in Emerson's Essays—

"There is one mind common to all individual men. Every man is an inlet to the same and to all of the same. He that is once admitted to the right of reason has been made a freeman of the whole estate."

With a "mighty line" of the Elizabethan dramatist Marston—

"The greatest misery of man is doubt."

For the sense of this Heraclitean saw, once we get its drift, is this: Whatever his whims, fancies, notions or impulses to action, even the most primitive savage is already on the road to constructive thought when he senses the existence of certain laws controlling himself and his environment, which, if understood, will, in turn, give him that lordship over things, which is science, or in his own terminology, "magic." In wild nature or the jungle, man was literally "up against it," overwhelmed by hostile forces stronger than himself, like soldiers gassed or shell-shocked at the front. The law of his being in such situations was that species of decerebration or "cold feet" which the Greeks labelled *panikos phobos* or "Panic Fear" (Myres). To look into the face of the Great God Pan was, for the Greeks, a sign of impending death; and perhaps it is because one is advancing in years that we had our first fleeting glimpses of him in the Far East. One glimpse was afforded in the singular hysteria of some primitive Tagalogs when confronted by the possibility of a swift rapid incision (under carbonic acid snow) to let out pus from

[2] Cited by Myres in: *Science and Civilization*, Oxford, 1923, 8.

a superficial abscess. Another was the tendency of lepers and wounded savages to hide in the jungle or other secret places rather than undergo treatment in hospital; another was the instinctive and apparently beneficial use of opium by the races given to running amok or *juramentado* in that devastating humid heat. Steaming into Canton on a stifling, stuffy morning, I remarked upon the frantic runnings to and fro of coolies pulling rickshaws along the *Bund,* their eyebrows slanted into a veritable zigzag, a *Treppe* or "staircase phenomenon." As the stolid English captain remarked, they might well bestir themselves, for failing the few copper coins it was up to them to gain, there was nothing for it but to go hungry for days at a stretch, with the common sequel of suicide or murder. In the jungle, then, whether of the hinterland or of a large city, the primitif encounters just what Roosevelt said that government should not do: he finds the cards stacked against him. The almost senseless fecundity of nature in the tropics, the incontinent swarming of insects, reptiles and plant life at sudden intervals, is apt to overwhelm and stupefy even the sophisticated indweller of more temperate climes at the start, when he is not used to it. The reactions of prehistoric man to disease, injury, or impending death from hemorrhage, suffocation or physical violence, were, in Sudhoff's reading, of the same type: "What and whence this undecipherable thing which thus assails us?" Now there is this about anxiety or worry that, if once allayed, it leads to that line of least resistance known as Maupertuis' Principle, expressed by a droll army file of my acquaintance as follows: If anything gets into a hole, it tries to get out of that hole with as little trouble to itself as possible. In other words, the initial reaction of the mind, when overwhelmed by something unknown or unthinkable, is not a vigorous offensive, but that purely defensive strategy which, in warfare, as Myres says, "often spells disaster." When the mind begins to cast about for offensive measures, say even those of primitive magic or "making medicine," it is already on the road to science; and it is man's natural conceit of himself with regard to

the infallibility of science or of his notion of it, which the old philosopher regarded as his principal handicap in coping with the hostile forces of nature. Timidity and temerity, fear and self-conceit are man's worst enemies. This is what Heraclitus meant when he said that most people incline to live according to their own notions, even where reason is possible and accessible.

Now what has all this to do, you may ask, with the theme of this paper? It has everything to do with it. For directly man climbs out of the nomadic state into the pastoral, he proceeds to domesticate the wheat, the barley, the plants, the animals, his family, his fellows and even the water about him. In the wild state, his marital and domestic status was that of the poor Indian of the Amazon forests, who, like the roving Englishman in Grenville Murray's story, "had a wife cruising around somewhere:" "I had a wife once but I don't know where she is now; the children went off and I lost her; she is hunting somewhere, like me." Domestication is the first step toward civilization, *i.e.,* the kind of *Kultur* which springs up among civilians in cities; and with domestication, the doctor of medicine begins to emerge from the chrysalis of the mere charlatan or medicine man.

Wherever man settles for a pastoral or civic existence, he instinctively seeks the neighborhood of inland seas or other watersides, for commercial and agricultural purposes. What Myres calls domestication of water,[3] was thus the essential factor in the civilizations of Egypt, of Assyro-Babylonia, called the Land between the Rivers, and of Crete, which may be said to have domesticated even the Ægean Sea, with reference to harbors, shipping and marine zoology. In Egypt and Assyro-Babylonia, those great "riparian states," virtually founded upon burning sands and mudflats, man is thus, for the first time, not overwhelmed by the hostile forces around and about him, but actually in position to tame them and make them work for him. Through the fundamental achievement of these

[3] Myres: *op. cit.,* 26-35.

great river-valley cultures (domestication of water), it was possible to irrigate the great wheat-fields of the Mesopotamian plain, which were fought over by grasping rivals for thousands of years; to effect astronomical calculations, to apply the geometric idea of mensuration to such things as time, partition of land, the adjustment of taxes, fines for criminal offenses, the paving of streets, estimation of the cubic content of great sewers and drains; while records were preserved in arrow-shaped characters on queer shredded wheat tablets of baked clay. In the Nile Valley, similar developments go back to an even remoter period and survive for an even greater stretch of time. The old prehistoric trait of making pictures on walls, true repositories of records preserved in queer picture writing; the ramshackle pantheon of gods with heads like those of domesticated animals, the chipped flint knives, the peculiar evolution of baked clay pottery and of sculpture, all point to emergence from the stone-age. Egyptian civilization may go back as far as 13000-15000 B. C. The extraordinary feats of engineering implicit in the great columns, pyramids and temples, the dignified, stately sculpture, the many creature comforts and luxuries of the New Empire, all indicate a civilization as elaborate and highly specialized as our own. Most of the papyric texts give us Egyptian medicine in its decadent or sleepy pear phase. The oldest known, the Smith Papyrus (1600 B. C.) suggests that Egyptian surgery may actually improve as we move backwards in time. The phase outlined by Herodotus (450 B. C.), a doctor for every disease, is that of a very late period of extreme specialization, not unlike the medicine of the present hour. On the other hand, the many different statuettes of Im-hotep, the father of Egyptian medicine (4500 B. C.), go back to a phase of medicine in which, as in our own country, the doctor becomes a prominent government official on occasion, and that period may be late or early. Im-hotep held four cabinet portfolios, which somehow suggests Benjamin Rush, Hubert Work, Sir Michael Foster, Lord Ilkeston, Lord Dawson of Penn, Virchow or the 274 American physicians who served in

Congress between 1789 and 1910. In the palmy days of Egyptian medicine, the physician was already a personage of great credit and renown. The phase of Babylonian medicine which Herodotus describes—"the whole people as physician"—indicates also a very late period, namely, socialized medicine, a very dubious phase, to which we ourselves may be tending. In the Code Hamurabi, the Babylonian physician of 2250 B. C. was definitely protected as to fees but rigorously punished for malpractice. By 650 B. C., he was in one instance, a family counselor of royalty. His status in a world of medical socialism was obviously not as high as among the medical specialists of Egypt, and this is also startlingly modern and worthy of some attempt at elucidation. Both these great riverside cultures, Egypt and Babylon, managed to persist longer than any others known and by a process which Myres describes as not unlike that by which the Eastern Roman Empire (Byzantium) held its own for a thousand years after the fall of the West. In all three, as in China, the intelligentsia or intellectual aristocracy, who were the sources of knowledge and the agents of power, as being the brightest and keenest minds in their class, gradually merged into oligarchies or autocracies, the watch-words of which were "hush—hush and *verboten*." The results were complete suppression of mental freedom, complete sterilization of original thought and investigation, complete social control or virtual enslavement of the individual unit. The Egypt, Babylon, China and Byzantium that we know were cold storage plants of knowledge acquired in the past. The religious system of Egypt, like that of the Middle Ages, was concentrated more upon the world beyond the grave than upon actuality. The Babylonian system, like that of present Soviet Russia, saw death as practically the end of all. Yet the artists of both Egypt and Babylon were remarkable descriptive biologists and experts in human constitutional anatomy, as witness the wounded lions of the Assyro-Babylonian bas-reliefs; the depiction of bearded barley (*Hordeum spontaneum*, the earliest known plant) on an Egyptian tomb (first

dynasty) at Abydos; the Sumerian boundary stone (1185 B. C.) which already presents the signs of the zodiac; the Egyptian carvings of mules, horned cattle, gazelles and pelicans on slate or ivory; the massive, realistic portrayal of ethnic types in Egyptian and Assyro-Babylonian sculpture and the more sophisticated flappers, society girls and acrobatic dancers of later Egyptian art. Comparable with the Smith and Ebers papyri are the Assyrian medical texts and herbal assembled by R. C. Thompson (London, 1926). But the clinical medicine of the Ebers Papyrus, while abounding in prescriptions employing apothecaries' weights and measures, reveals no such *flair* in diagnosis as is to be found in the surgery of the Smith Papyrus; and in Assyro-Babylonian medicine, ætiology was mythology, diagnosis was mainly guesswork, prognosis was hepatoscopy, astrology and omen-lore, therapeutics was exorcism with herbals and *Dreckapotheke,* prophylaxis was incantation and even epilepsy and arthritis deformans were envisaged as seizure by demons.

In Greece, what a change! Clinical or bedside medicine becomes scientific in method, although, except in the mathematics, the Greeks neither verified premises nor subjected conclusions to a rigorous scientific proof. The animals and plants depicted on Cretan wine-cups and bas-reliefs, on Greek coins, vases and friezes are identifiable as to genera and species and still to be found along the Ægean and Ionian littoral. The Greek name for a painter (*zoographos*) implies a descriptive zoologist; and this tendency, whereby the physician assimilates an aptitude for close observation from the artist, culminates in the *Rhizotomikon* of Crateuas, the *Historia animalium* of Aristotle, the Botany (*Historia plantarum*) of Theophrastus and the Materia Medica of Dioscorides. In Theophrastus and Aristotle, the *tribe meta logou* or clinical method of Hippocrates[4] (first grub for facts, then reason about them, to get at the essential law behind them) be-

[4] See Dr. Howard A. Kelly's Hunterian Oration (1928).

comes the mode of reasoning and mental discipline employed in all the other natural (biological) sciences. Hippocratic surgery is aseptic in intention at least, and by Galen's time, medicine is theoretically based upon anatomy and physiology. Hippocrates appears in Plato as a highly individualized being of original mind and independent personality. Galen, physician to one of the great Antonine emperors and the first great experimental physiologist before Harvey, adopts the Roman law-makers' habit of codifying and systematizing knowledge, sets the pace for the great medical encyclopædias of the Byzantine, Arabian and mediaeval periods and, through his mania for seeking the "why" rather than the "how," sterilizes the medicine of the West for nearly 1700 years. In consequence, mediaeval clinical medicine, and with it the social status of the doctor, sink to what Allbutt styles "an almost unexampled degradation." Up to the time of Leonardo and Vesalius, anatomy and physiology are virtually non-existent. Military surgery is developed, as with the Greeks and Romans, through the exigencies of constant warfare; and public hygiene through the devastating mortality and social inconvenience of the great epidemics. Apart from the temporary social status or political power of the physician, what, then, is the role of medicine as a civilizing medium in classical antiquity and the Middle Ages? It is perhaps implied in the Hippocratic phrase *"non nocere,"* whereby, in a world notable for the destruction of life by warfare, by the bizarre impulses of military or political tyranny, or the homicidal force of swift descending epidemics, before which collective humanity is powerless, the doctor appears for the first time as the one social unit who is neither indifferent to nor stupefied by these forces, but actually sets his will, his mind and his knowledge up against them. As Singer states, [5] the spirit of the antique world, like that of wild nature, was nowise sympathetic or considerate of human suffering, bodily weakness or deformity, personal misfortune or social disability. "While other animals have an instinctive knowledge of their own

[5] Singer: *From Magic to Science*, London, 1928, 13.

powers" (he cites from Galen), "only man is helpless without instruction. He alone desires honors and possessions, he alone provides for his grave and even for his future after death. All other animals live at peace with their kind, but with man, verily, most of his misfortunes are the doings of his fellows." And thus Plautus: "Man is the wolf of man (*homo homini lupus*), nay a man is regarded as no more than of the nature of vermin by a stranger who does not know him." *Vae victis* was the law of the antique world. Whole populations were put to the sword on occasion; but ancient humanity was no worse than its successors in some important respects. To realize the enormous amount of meaningless bloodshed through the ages, read Quanter's History of Torture or Winwood Reade on the Martyrdom of Man. Through all this long, gloomy recital, medicine emerges in the background as an impersonal, undemonstrative, not overly enthusiastic friend of humanity, and as sometimes happens in actual life, such friends may turn out to be more helpful and reliable than the kind who affect great heartiness of manner, are voluble in expressions of regard, and incline to make a great flourish of concern about the other fellow's welfare. It is perhaps through this very impersonal attitude that medicine was at length able to accomplish something for humanity. In antiquity, for example, the wounded common soldier received no aid whatever on the field of battle, could only crawl to shelter when maimed, and usually bled to death. Army surgeons existed only for the benefit of the particular overlords of whom they happened to be vassals. But in the 16th century, Ambroïse Paré, who sprang from the people himself and made his way to the front through his own industry and ability, takes the novel republican line of occasionally helping the common soldier. All his worry about pouring boiling oil into wounds, or transmission of infection by flies, sprang from concern about the sufferings of the rank and file of his wounded.

Meanwhile as far back as the battle of Laupen (1339), the cantons of the little Swiss Confederation, already vir-

tually a republic, had begun to appropriate definite money to insure the proper humane care of the wounded;[6] and by the 18th century, first France, and then other countries, began to print military orders and regulations on official paper, as public documents, notifying the wounded soldier, who risks life and limb for his country, that his government is definitely behind him in the enterprise and engages, in honor, to look after his welfare on the field of battle. Even through the Crimean War, the Moslems and the Turks continued to pile their wounded in heaps and rows, and then desert them, as being cheaper administration, albeit glossed over by the somewhat pretentious fatalism of Islam.

As an agency in the advancement of science, medicine seems to become remarkably prominent and efficient in periods of great intellectual fermentation, such as the Periclean, the Renaissance, or the post-Napoleonic, but in more quiescent periods, such as the 17th century or the Victorian era, medicine itself is very materially forwarded by scientists and the rest of the non-medical.

In antiquity, Aristotle, Theophrastus and Dioscorides, physicians all, did most for natural history (botany and zoology) and even geology and palæontology find their literary origins in the *Meteorics* of the Stagirite. In the Middle Ages, Avicenna was the first to attempt an exposition of the origin of mountains; but apart from the work of miniature painters in the illuminated manuscripts and Books of Hours, culminating in the great *Horae* of Jean de Bourdichon (1508), the leading naturalists were Albertus Magnus (a Dominican), Thomas of Cantipré and Roger Bacon (a Franciscan). With the Renaissance, however, descriptive botany and zoology were cultivated at first hand as independent sciences, and this advancement was again the work of physicians. In the matter of botany alone, one has only to think of the German Fathers (Brunfels, Fuchs, Bock, Cordus); of the Italians Cesalpino, Della Porta, Brassavola, Mattioli, Bonafede, Leoniceno and Anguillara; of the Frenchmen Ruelle, Clusius, Belon and Lespleigny; of the Englishmen Turner and Gerard; of the Spaniards Oviedo and Monardes, the Swiss Gesner and the Belgian Dodoens. Among the medical zoologists are Conrad Gesner, Aldrovandi, Fabricius, Casserius, Carlo Ruini, Edward Wotton and Volcher Coiter, the founder of comparative anatomy. Palæontology (fossil remains) was studied by Fracastorius,

[6] C. Brunner: *Die Verwundeten in den Kriegen der alten Eidgenossenschaft.* Tübingen, 1903.

and the first treatise on mining (*De re metallica*) by George Agricola (1556), the "father of mineralogy," later translated by Herbert Hoover (1912), was the work of a physician. In the mathematics, Fernel made the first exact measurement of a meridian, (1528); Cardan wrote an algebra (1545) containing the (Tartaglia) method of solving cubic equations associated with his name; and Robert Recorde, the first English writer on arithmetic, algebra and astronomy, introduced the plus, minus and equality signs. Many of the earlier school arithmetics were also written by doctors, notably those of Johan Widman (1488), Giorgio Valla (1501), Arnold of Villanova (1501), Jean Fernel (1528), Georg Agricola (1533), Geronimo Cardan (1539), Gemma Frisius (1540), Robert Recorde (1542) and Michael Neander (1555). Horoscopes and almanacs containing astronomical computations (*e.g.*, those of Regiomontanus) were usually the work of physicians. Galileo had studied medicine and Copernicus was a medical graduate. The chemical tradition, established by Paracelsus, came to a focus in the first formal text-book on chemistry, the *Alchymia* (1595) of the physician Andreas Libavius, and was continued in the 17th century by John Mayow, Van Helmont, Franciscus Sylvius, Robert Boyle, Minderer, Lemery and Mynsicht. Geology and mineralogy were advanced by Stensen, who discovered fossil remains and founded stratigraphic geology (1669) and by Bartholinus, who discovered double refraction in Iceland spar (1670). The year 1600 is memorable for the publication of the great treatise on magnetism (*De magnete*) by William Gilbert, physician to Queen Elizabeth and James I. The botanical tradition is maintained by such 17th century physicians as Hooke, Grew, John Ray, Rivinus, Tournefort and Camerarius; the zoological by Swammerdam, Malpighi, Severinus, Martin Lister, Edward Tyson, Wormius, Vallisneri and Redi. In the 18th century, medicine claims among the botanists, Linnaeus, one of the greatest naturalists of all time, as well as the Jussieus, the Saussures, Boissier de Sauvages, de Candolle, Haller, Adamson, Pallas and Trembley; among the zoologists and comparative anatomists, Buffon, Vicq d'Azyr, Bonnet, Erasmus Darwin, Geoffroy Saint-Hilaire, J. J. Meckel; among the chemists and mineralogists, Black, Boerhaave, Dalton, Scheele, Berzelius, Wollaston and Davy; among the physicists, Young, John and Daniel Bernouilli, Galvani, Oersted, Fahrenheit, Réaumur and the astronomer Olbers. Some thirty plants were named after American medical botanists of the 18th and 19th centuries, and we need only mention such moderns as Pfeffer, de Vries, Ferdinand Cohn, Sprengel, Treviranus, Rudolphi, Mohl, Robert Brown, S. F. Gray, Asa Gray, Jacob Bigelow, in evidence of the continued fostering of this science by medical men, from Theophrastus to Tschirch. In zoology, Johannes Müller, von Baer, Huxley, Kölliker, Henle, Haeckel, Fritz Müller, Weismann, Milne-Edwards, Roux, Driesch, Gegenbaur, Wiedersheim, Duméril, Lacepède, Rudolphi, Siebold, Küchenmeister, Leuckart, and Leidy uphold the same tradition; in geology and palæontology, Parkinson, Murchison, Huxley, Agassiz, Leidy, Gibbs, Newberry and the Lecontes; in chemistry, Dumas, Wöhler, Chevreul, Berthelot, Berthollet, Bourquelot, Bunge, Frerichs, Hoppe-Seyler, Abderhalden, Buchner, Ehrlich and the Drapers.

In physics, Helmholtz is one of the greatest names, and Robert Mayer, Sainte Claire Deville, Dulong, the Weber brothers, Poiseulle, du Bois Reymond, Brücke, Mach, Flick, Vierordt and Ludwig were all medical graduates, as were the psychologists Lotze, Wundt, Fechner, Hering, Romanes, Preyer, Donders, Binet, Janet, Freud, Adler, Pavloff, Munsterburg, Jung, Stekel, Boas and Scripture.

In classical antiquity, as stated, the physician bore and maintained only an oblique, casual, detached, impersonal relation to the advancement of civilization, as Pericles sensed the term in his famous oration, *viz.,* when life is so arranged that the civilian in cities does not bear arms against or otherwise make war upon his neighbor but is inclined to coöperate with him and help him. In the antique world, as throughout the Middle Ages and down to about 1850, there was a constant stream of evil spoken of physicians, in the way of satirical allusions to their failure to cure, their frequent losses of patients, their love of money. But where the doctor seemed to kill rather than to cure, where some acquired a reputation for filling graveyards, it was plainly due in most cases not to malice aforethought, but to ignorance, incompetence or to that overweening conceit as to his own powers which Heraclitus regarded as one of the most formidable enemies of man. No matter what bizarre medical theories obtained in any period, the greater physicians, as Dr. Welch has pointed out, somehow got their patients well and their reputations, their wealth, their extensive clientèles were obviously due to that fact. How did they manage it? Principally, one might surmise, by the kind of personal care and attention (*curare*) which is equivalent to good nursing; by the use of simple remedies; and above all by adherence to the Hippocratic precept *non nocere,* to do no harm if you can do no good. "Natural forces within us," said Hippocrates, "are the true healers of disease." This ultimate reliance upon the defensive mechanisms of the body, the equivalent of Ambroïse Paré's "I dressed him: God healed him," has characterized all the greatest healers of disease and injury.

The big thing about the doctor is this: while he holds the keys of life and death in his hands and might virtually

assassinate patients by intentional malpractice or neglect, the test and touchstone of a true physician is that he never does, and that has been his principal contribution to civilization. In armies, the doctor has sometimes had a hard time of it and was looked upon as a kind of anomaly in the military scheme of things, which he, in fact is, since his essential function is to save rather than to slay. But without evacuation and proper care of the wounded, the fighting lines become demoralized, as Livy has so vividly shown in his Roman History. The Napoleonic wars, as well as the World War, have shown conclusively that the most gigantic armies will melt away to nothingness in time, unless there be constant salvage of sick and wounded personnel. The true functions of the medical officer, apart from the sanitary aim of keeping his organization in good health, is therefore, helping to maintain the defenses of his country, including the winning of victories in battle, by salvage of personnel. Thus the fundamental aims of general medicine and of military medicine are identical. The slow development of this basic ideal of salvage of personnel, out of the primitive Ishmaelite code of *homo homini lupus* and "beggar my neighbor," is delineated with broad strokes in the fifth book of Lucretius (1011-1027):

"Next, when they had got them huts and skins and fire and woman was appropriately mated to one man, and the laws of wedlock became known and they saw offspring born of them, then first mankind begun to soften. For the fire saw to it that their shivering bodies were less able to endure cold under the canopy of heaven and Venus sapped their strength and children easily broke their parents' proud spirit by coaxing. Then also neighbors began eagerly to join in a league of friendship amongst themselves to do no hurt and suffer no violence, and asked protection for their children and womankind, signifying by voice and gesture, with stammering tongue, that it was right for all to pity the weak. Nevertheless concord could not altogether be established, but a good part, nay the most part, kept the covenant in good faith or else the race of mankind would even then have been completely destroyed, nor would birth and begetting have availed to prolong their posterity."

It is hardly necessary to repeat that this Lucretian citation actually depicts the evolution of civilization, *i.e.*,

the advancement of mankind out of the savage, nomadic, predatory status up to a more secure and coöperative social organization, which favors and is conditioned by the development of science and art. It is equally apparent that this life-saving and life-enhancing function of civilization is identical with that of medicine; and that wherever the healing function of medicine and the safe-guarding role of hygiene are developed and maintained at high levels, there also will civilization maintain itself at a level correspondingly high. The role of medicine in this relation is, however, impersonal, disengaged, disinterested, like that of the sunlight or radium or other phases of *milde Macht* in therapy. Accepting, provisionally, Goethe's device for the development of civilized people—

> "Wer Wissenschaft und Kunst besitzt.
> Der hat Religion.
> Wer keine von den Beiden hat,
> Der habe Religion"—

it may be affirmed that medicine, and science in general, lose caste, become inept and ineffectual when they attempt to take over or to obliterate the functions of religion, for the simple reason that, being illiberal, the aim is neither necessary nor desirable. Religion implies an emotional ligation or attachment to modes of belief regarding the spiritual, the supermundane, the supersensual, as in Christianity, or to a definite ethical code, as in Buddhism or Judaism. Scientific men, at best, may hold opinions only and these lightly, since hobby-riding in science connotes bigotry, conceit, pedantry or fanaticism. The very essence of the scientific attitude is capacity of the mind to change and adapt itself to new discoveries. People endowed with religious natures, however, are, in the very meaning of the term, wedded to convictions which, at one extreme, may result in bigotry or fanaticism, but at the other, have been most potent agencies for the development of personal nobility, ethical refinement and strength of character. Here, then, are two essentially different worlds of thought, of feeling, of approach to the problems of the universe, concerning which Virchow meant no flippancy when he

affirmed that they should be kept apart and do, in fact, mutually exclude each other: *Die Wissenschaft und der Glaube schliessen sich aus.*[7] Indeed, Claude Bernard deliberately advised the scientific man of religious temperament to shed his temperament when at his scientific employ, in order to "modify and change his ideas as science advances." Religious belief, then, implies emotion, conviction, fixation, tenacity of purpose, but, like Oliver Herford's bridal chamber, the purely intellectual *milieu* of science must be spacious enough to change one's mind in. With these fundamental antagonisms, medicine proper has little, if anything to do. Its role in the advancement of civilization is implicit in the Hippocratic sentence: "Wherever the art of medicine is loved, there also is love for humanity." As we shall see, the exploitation of medicine as a social force, adumbrated by Descartes and first definitely outlined by Virchow (1849), did not become a matter of special moment until after the World War, and then largely through confusion of the fundamental aims of bedside medicine (to cure disease or injury already acquired or incurred) with those of public hygiene (to prevent disease or injury beforehand). As long as and whenever people are sick or ailing, wounded or suffering, mentally or morally unhappy, medicine must remain eternally medicine.

Between the Renaissance and the 18th century, the physician rose steadily in social consideration and in some instances, in political power, but the men who illustrate

[7] A fair notion of the attitude of the scientific man may be gleaned from the viewpoint of Huxley, or the admissions of Professor Ostwald in "Individuality and Immortality" (Boston, 1906, 5, 36-38) that "It is only the inanimate part of the world which concerns him scientifically, and any ideas he may hold about the question of immortality are his private opinions and quite independent of his science. . . . Religious beliefs and similar sources are limited to the number of men giving them credence . . . . and can only be accepted by those who have passed through the inner experience and had the truth revealed to them by intuition." But "such predictions as are indorsed by science are accepted as the most reliable ones by the intelligent majority of men."

our thesis best are such as the quiet Linacre, the friend and physician of Erasmus and the "restorer of learning in England," or the physician-astronomers, Fernel and Copernicus, or such lucid spirits as Malpighi, Redi, Baglivi, Sydenham, Cheselden, Pott, Mayow, Linnaeus, Boerhaave, Haller, Peter Frank, Cruikshank, Young, Auenbrugger, Fothergill, Pringle, Lind, Heberden and Jenner. Bearing in mind the vast social influence of the clergy through the centuries, it would be absurd to see these great physicians as other than essential prime-movers of civilization.

In the 18th century, the physician enjoyed a unique social consideration unmatched in any other period. As the private counsellor of patients, he knew all the family secrets and skeletons, he knew all about every person in his village and people took off their hats to him. Many of the prominent physicians of the period, such as Garth, Arbuthnot, Blackmore, Akenside, Haller and Werlhof, were poets and men of letters, a tradition which has continued unbroken down to the present time. All the greater English physicians named had unique political influence. Sloane was president of the Royal Society and Radcliffe, a less scrupulous man, held both the Whigs and the Tories in his grasp, so that "the two factions of the aristocracy bowed before him." Garth, Sloane, John Hunter, Percival Pott, Jenner and Richard Brocklesby were probably the most charitable physicians in the history of medicine; William Hunter, Fothergill, and Lettsom among the most munificent in public benefactions. Young stands quite apart as one of the greatest physicists and scientific men of all time. When, by consent of the National Assembly, Philippe Pinel struck off the chains of 49 patients at Bicêtre in 1798, he achieved one of the largest humanitarian advances of centuries, *viz.*, the sane and humane treatment of the insane. In the American Colonies, John Morgan and Shippen were the principal founders of the Medical Department of the University of Pennsylvania (1762) and later Surgeons General in Washington's Army, while Rush wound up his days as Treasurer of the

United States Mint, which office he had held for fourteen years (1799-1813). In the long process of settlement of the country from coast to coast, the pioneer doctor often had to go over to farming or public office from sheer lack of patients in those thinly settled communities; but it is creditable that the *bona fide* physician got back into practice as soon as any was to be had worth having. During the 120 years between 1789 and 1910, no less than 274 physicians and 6 druggists served in Congress as members or senators, apart from 5 doctors who were elected but did not serve. The percentage from 1801 to 1838 amounted to a respectable fraction of both houses.[8] From the time of Im-hotep, the first known physician, doctors seem to get into public service on occasion. Jacques Loeb affirmed that no legislative bodies of the future will be efficient without a fair quota of scientific men.

In the Napoleonic period and after, the physician of advanced type continues to enjoy the same high consideration at the hands of mankind. Corvisart and Larrey were esteemed by Napoleon, who despised medicine. As scientific men, Johannes Müller and Laennec, Schwann and von Baer are names to conjure with. Bright, Addison, Hodgkin, Parkinson and Hope in England, Graves, Stokes and Corrigan in Ireland, while not particularly known to the general run of medical students in their time, were recognized by the *cognoscenti* as topmost figures in pathology and clinical medicine. In the clinics of Chomel and Louis, the leading American physicians of New England and the East were trained. Eminent men like Sir Astley Cooper and Sir Benjamin Brodie in London, James Syme in Edinburgh, Daniel Drake in Cincinnati, began to take the same keen, human interest in the personal welfare of medical students which subsequently distinguished such great teachers as Johannes Müller, Carl Ludwig, Virchow, Pasteur, Osler and Welch. As readers of Albert Smith or of Du Maurier's Trilby will recall, medical students bore a hard reputation in these early days. If we con-

[8] William Browning: *West. Med. Times*, Denver, 1919, xxxix, 39-47.

sider the pathos, the futility, the aimlessness of misdirected youth, what it must mean to a young man to be actually led by a great master over the terrain and upward pathway of personal nobility, personal honor and distinction of personality, *si jeunesse savait, si vieillesse pouvait,* contacts of this kind must seem among the biggest and finest achievements in the history of our profession. Young people to-day, as we know, enter life in an entirely different spirit. They enjoy a freedom and spontaneity which we, who were trained in a more austere and rigorous school, never possessed and never dreamed of possessing. Naturally, one thinks, not of the life-enhancing present, but of the sombre and somewhat depressing past, shall we say the Cincinnati of Mrs. Trollope's "Domestic Manners of the Americans" or of the somewhat gloomy class and dissecting rooms of Washington when I was a medical student?

The period around the year 1850 was unquestionably the most brilliant in output and far-reaching in consequence in the whole history of medicine. I shall never forget the impressive way in which the late Dr. Jacobi described his sensations and reactions, the feeling of imminent, indefinable, impending change, the impact of an intellectual fermentation which culminated, for him at least, in the Revolution of 1848, his subsequent imprisonment and escape to America. Spoiled and bored as we are with such things as X-rays, long distance telephoning, radio, radium, the cinema, television, trans-oceanic aviation, salvarsan and insulin, should we feel like that to-day if the following events crowded one another in rapid succession?

1846: Ether anæsthesia (Morton).
Weber brothers discover inhibitory action of vagus nerve.
Claude Bernard discovers digestive function of pancreas.
Stokes describes heart-block.
Marion Sims improves gynæcology.
Kölliker describes smooth muscle.

1847: Helmholtz publishes tract on Conservation of Energy.
Virchow's *Archiv* founded.
Joule determines mechanical equivalent of heat.
Simpson introduces chloroform anæsthesia.
Donders elucidates movements of eyes.
Ludwig invents kymograph.
Gerlach introduces carmine staining.
Young distils petroleum.
American Medical Association and New York Academy of Medicine founded.

1848: Claude Bernard discovers glycogenic function of liver.
du Bois Reymond investigates animal electricity.
Helmholtz locates source of animal heat in muscles.
Société de biologie (Paris) founded.
American Association for the Advancement of Science founded.

1849: Claude Bernard's piqûre of the fourth ventricle.
Marion Sims' operation for vesico-vaginal fistula.
Addison describes suprarenal disease and pernicious anemia.
James Thomson standardizes thermometry (absolute scale of temperature).
Virchow appointed professor of pathology at Würzburg.

1850: Helmholtz measures velocity of nerve-current.
Clausius demonstrates second law of thermodynamics.
Waller states law of degeneration of spinal nerve-roots.
Rayer and Davaine discover anthrax bacillus.
Drake publishes *Diseases of the Mississippi Valley*.
William Detmold (New York) opens abscess of brain.
Lemuel Shattuck reports on backward condition of public health in Massachusetts.

By 1851, Helmholtz had invented the ophthalmoscope and medicine of scientific intention and achievement had already become a going concern. In this quinquennium, which Jacobi regarded as the most stirring in his whole existence, the outstanding figure was undoubtedly that of his old master Virchow, who, like himself, was an advanced liberal and, if not a revolutionist, the author of the most revolutionary pronouncement on medicine since the Hippocratic tract on the sacred disease.[9] From his earlier flaming manifesto about the social causes of Silesian typhus epidemics up to his political duels with Bismarck or his anger over the Spanish-American War, Vir-

[9] Virchow: *Die Einheitsbestrebungen in der wissenschaftlichen Medicin*, Berlin, 1849.

chow stands out as the first aggressive medical champion of humanitarian aims, wrong-headed in some ways, no doubt, but, with regard to his fragile physical envelope, a gallant little figure, his watchword, in fact, identical with that of the hero of Sartor Resartus: *Die Sache der Armen in Gottes und des Teufels Namen.* In 1849, he publishes his epoch-making pamphlet on unitarian aims in scientific medicine, which makes no particular splash at the time, but leaves its mark as effectively as the later agnostic pronouncements of Huxley. For to tenets such as these, published 80 years ago, the medical world has been coming back and will continue to come back as long as medicine remains medicine:

Physicians can only be called such when the ultimate aim of their labors is the healing of disease.

But once we have recognized that disease is naught else then the course of vital processes under altered conditions, the concept of healing expands to imply the maintenance or the reëstablishment of the normal tenor of existence. Even in the hands of the greatest physicians, the practice of medicine is never identifiable with laboratory (experimental) medicine, but is only an application of it.

Physicians are the natural attorneys of the poor and no small part of social problems comes under their jurisdiction.

Belief begins where science leaves off and ends where science begins.

The task of science is not to attack the objects of belief but to stake out the limits of the knowable and to center consciousness within them.

Humanism is neither atheistic nor pantheistic, since it has but one formula for things unknowable, namely: I do not know.

As Virchow grew older, he worried unduly about the fortunes of his solidist (cellular) scheme of pathology, then threatened by the rise of serology or other aspects of the spectre "humoralism"; and the end of his life found him, as his contemporaries noted, a liberal still in politics but a reactionary in science. His intellectual duel with the monist Haeckel took the fatalistic Moslem line of "Resignation" in the face of seemingly insoluble problems, some of them since shown to be sparingly soluble. In prefacing a translation of these polemics, Huxley humorously declared for "a strict policy of non-intervention." But in the history of the progress of humanitarian

liberalism in the 19th century, the name of Virchow will always be a bright particular star in the firmament. By contrast, his great contemporary Helmholtz remained inscrutable and impersonal with regard to questions of theologic, social or philosophic import, but left enthusiastic testimony as to the effect of medical training and the kind of reasoning which the physician employs upon individual capacity to cope with the problems of more abstract science. About Helmholtz, too, is the peculiar nimbus which invests the physician who is an actual, going practitioner of the fine arts—in his case, music. Aside from Athanasius Kircher, Felix Platter, Caspar Bartholin, Boerhaave, Auenbrugger, Withering and Arbuthnot, who were earlier followers of this cult, the profession numbers such remarkable musical amateurs and *maestri* as Carl Ludwig, Henle, Max Schultze, Billroth, Engelmann, Sir Richard Owen, Sir Robert Christison, Naunyn, Kahlbaum, Wilhelm Ebstein, Julius Jacobson, Ludimar Hermann, Duke Carl Theodor of Bavaria (ophthalmologist and composer of chamber music), Alfred de Bary, Borodin (composer of "Prince Igor"), Jacques Loeb, Arpad Gerster, Hecht, Herter and Hemmeter. Equally impressive is the list of talented medical artists, *e.g.*, John and Charles Bell, Richard Bright, Thomas Hodgkin, Jacob Henle, the elder His, Cruveilhier, Lord Lister, Joseph Leidy, Charcot, Auvert, Paul Richer, Lebert, Hope, Carswell, Sir Leonard Hill, Ramón y Cajal, not to mention hundreds of lesser known physicians who have excelled in drawing, painting, etching, engraving and modelling in the round. The recent exhibits of the artistic productions of Sir Leonard Hill and of local physicians at The New York Academy of Medicine and at Toronto in the same year (1927) were distinct revelations as to the latent potentialities of our profession in this regard. Yet it will be perceived at once that the vision of the artist and the physician's way of envisaging disease at the bedside (Charcot's "spontaneous mental approach *sans parti pris*") are one and the same. The list of medical poets, from Nikander to men like Lodge, Campion, Goldsmith, Schiller, Werlhoft Haller,

Keats, Beddoes, Littré, and latterly Holmes, Weir Mitchell, Kussmaul, Volkmann, Kraepelin, Sherrington, Henry Head and Robert Bridges; or of critics like Sainte Beuve, novelists like Smollett or Charles Lever, or dramatists like Echegaray or Arthur Schnitzler, is much too long to be considered here, but is what might be expected of the enterprising spirit and observant nature of the true physician. As we have seen, doctors have been the original prime-movers and continuators of botany, zoology, geology, paleontology and the rest of the so-called natural (biological) sciences and even in the mathematics and astronomy, such names as Copernicus, Young and Helmholtz give color to Huxley's claim that "medicine has been the foster mother of all the sciences." That the medical men who excelled in mathematics and music have been mainly physiologists is perhaps explicable by the fact that experimental physiology is itself an analytical (mathematical) science, turning, in the first instance, upon ability to count and measure,[10] while diagnosis and general bedside reasoning are synthetic.

In exploration and the settlement of undeveloped continents and communities, physicians have ever been advance agents of civilization, nursing the population through the social ailments of political infancy and childhood up to adult self-dependence. In this phase, army surgeons, usually the first settlers, have had a prominent part and that part has been played well and manfully. Apart from ordnance surveys, the botany, zoology, geology, mineralogy, forestry, indeed the entire natural history of the gigantic peninsula of Hindustan, were worked out, in the first instance, by officers of the Indian Medical Service, and something of the same kind was accomplished by medical officers of the U. S. Army in some regions of the far West and, with reference to communicable diseases, in the Antilles and the Philippines. In recent times, physicians like Charcot, with his vast clinic of 5000 patients

[10] The essentially mathematical nature of music was expounded by the great mathematician Sylvester (*Phil. Tr.*, Lond., 1864, cliv, 613.)

from all parts of the globe, Osler at Baltimore and Oxford or Ehrlich at Frankfort, acquire an ecumenical status, become physicians to the entire human race *in posse,* and what is more important, in spirit and *manière de voir.* There has been too, a kind of apostolic succession from great medical teachers like Rudolphi, Johannes Müller, Hyrtl, Carl Ludwig, Claude Bernard, Michael Foster, Charcot, Osler and Welch, who formed some of the ablest investigators, teachers and practitioners of recent times through that personal contact and personal touch, without which the student seems often to "eddy at large in blind uncertainty." A still higher function of medicine, as yet dimly realized, was clearly stated by Descartes: "If there is any possible way of increasing the wisdom and ability of mankind, it must be sought in medicine." This, the social function of medicine is, however, entirely different from socialized, or what now might be termed, Sovietized (*i.e.,* over-organized) medicine. One proposes to level humanity up to the outlook and attainment of scientific medicine; the other to level medicine down to average human comprehension. Either aim might be feasible enough with reference to instruction in personal (individual) hygiene, depending in each case, upon the mental capacity and degree of education of the individual; but neither aspect of this extremist program would benefit the bedridden sick or injured a particle. Medicine and hygiene start from the same point (maintenance of health) but, as Sudhoff has shown, their lines of approach and attack are entirely different. At the mathematical limit, they seem to fuse again in the ultimate ideal of military medicine, "salvage of personnel." With reference to the physical and moral damage done to humanity by wars and disease, the unattainable ideals of medicine and civilization become one and the same, as crystallized in the sonorous verses of Lucretius:

"Nec tamen omnimodis poterat concordia gigni,
Sed bona magnaque pars servabat fœdera caste;
Aut genus humanum jam tum foret omne peremptum
Nec potuisset adhuc perducere saecla propago."

F. H. Garrison

THE SERUM TREATMENT AND ITS EVALUATION IN LOBAR PNEUMONIA *

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INTRODUCTION

The invitation to deliver this address is appreciated as a great honor. It is especially prized as it gives me an opportunity to acknowledge the great interest and support of Dr. Lewis K. Neff, Director of the Medical Service at Harlem Hospital, to express my appreciation for the inspiration, criticism and constant expert guidance of Dr. William H. Park, as well as the invaluable co-operation of my associate, Dr. Milton B. Rosenblüth, and finally, to announce that the work described in this lecture has been fostered by the generous financial support and the personal encouragement of Mr. Lucius N. Littauer.

In the blood of patients who recover from pneumococcus pneumonia, there are usually demonstrable, protective substances against the type of organism which has invaded the patient. The development of these protective substances or antibodies is one of the mechanisms involved in recovery. The antibodies may develop in patients who die, but patients who fail to develop protective antibodies, do not recover. Serum treatment transfers to patients the protective antibodies made by horses in response to killed pneumococci.

The present day serum treatment of pneumonia presupposes an ultimate accurate knowledge of the organism invading the victim, and an available supply of concentrated serum of titrated protective value. There are refinements which increase the efficiency of the treatment,

* From the Littauer Pneumonia Fund of New York University, and the Medical Service, Harlem Hospital.

and make it more economical, which will be mentioned in the course of the presentation.

The diagnosis of the invading type is revealed by precipitation or agglutination typing tests. These are performed in the following way: the specific soluble substance or carbohydrate formed in the capsules of the organism, is agglutinated or precipitated with antiserums from rabbits or horses.[2] These tests are performed on the extracted sputum (Krumwiede Test), on the peritoneal exudate obtained from a mouse after inoculating it with sputum (Avery), on organisms recovered (a) from the mouse's blood stream, by inoculating broth with its heart's blood when the peritoneal exudate is taken, or (b) from the blood stream of the patient. The tests may also be performed on specific soluble substance excreted in the urine, and on pus or organisms recovered from exudates. Occasionally, where no sputum has been obtained, it has been possible to recover a few organisms by aspirating the lung. In addition to these methods, a study of the rate of antibody[1] disappearance from the blood stream apparently may, at times, guide us in diagnosis, if when equal amounts of antibodies of two types are injected, one type disappears very rapidly. Of course, we must be sure that the organisms are Gram-positive diplococci, soluble in bile before typing them.

At times, a report of miscellaneous group invasion is made from one Laboratory, and of Types I, II or III, from another. This is disconcerting to the practitioner. One must be discriminating in interpreting any such difference. The report of a fixed type must be regarded as very strong evidence of the presence of that type. The test is so controlled that a positive report means that an emulsion of the organisms has precipitated with one test serum and failed to precipitate with the others. If precipitation

[1] In this lecture the word antibody is used though it is recognized that the agglutinin is measured. Antibody may be present when agglutinin is not.

[2] Since delivering this lecture the microscopic slide agglutination test has been developed and described by Sabin, from the Harlem Hospital service.

occurs in all or none of the tubes, the type is not determined, and the pneumococcus belongs to the miscellaneous group. Such a difference in reports may be produced, if only occasional tests are made, either by improper serum, serum improperly kept, or, in the case of cultures, by unsuitable media, or by insufficient inoculum for the mouse, by failure of the mouse peritoneum to digest the sputum and by the presence of other organisms which precipitate non-specifically. Sometimes the true type may be determined by diluting the culture or exudate in parallel with stock strains to titres of 1:60 or even 1/120, when the fixed type will be revealed by agglutinating in parallel with a stock culture. Miscellaneous group organisms will promptly fall out. On the other hand, there may be several types invading the patient simultaneously. On some occasions, organisms of Type I were obtained from the peritoneum and those of the miscellaneous group were found in the mouse heart's blood.

Miscellaneous organisms are frequently regarded as slightly virulent, and the discovery of them is thought to be of good omen. This is not always true, as some of the organisms are of great virulence, and invade the blood stream. Difference in reports may accordingly be due to failure to recognize a fixed type, or to simultaneous invasion of different types. Miss Alburta Brown, by careful study of our cases, at first typed with the routine methods mentioned as miscellaneous, found that 20 per cent of miscellaneous cases were actually infected by Type I or Type II.

The incidence of pneumonias by type has been studied by many. In our own cases, where the distribution is fairly typical, approximately 50 per cent of the cases are due to Type I and Type II, so that a polyvalent serum, containing Type I and Type II antibody, will be effective in half the cases. Type III occasions 13 per cent of cases. The miscellaneous group occasions, in different years, approximately 35 per cent to 45 per cent of all cases (see Fig. 1). We are justified in using polyvalent serum for

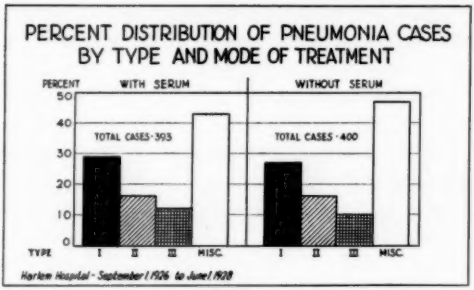


FIG. 1

some of the cases in which miscellaneous group is reported, because of the possibility of simultaneous infections with Type I or Type II, which cannot be revealed without time-consuming, intensive study of the sputum, blood and urine of the patient.

Occasionally, there is difficulty in obtaining sputum for typing. One should not delay giving serum in order to type the cases, nor should one be misled by a report of Group IV, as the positive demonstration of an organism of a definite type is of greater diagnostic value than failure to discover a fixed type by the methods employed. Polyvalent serum for Type I and II should be given at once, as these are the most prevalent types. It is improbable that the slight cross protection for Group IV organisms in the serum is of great therapeutic value.

From the miscellaneous or group IV, Dr. Park and Miss Cooper [3] have isolated seven additional strains.[4] They have also confirmed the existence of the two sub-types of II, originally isolated by Avery, our Type V and Type VI, and also a sub-type of Type III, our Type VIII. Thus there are now thirteen types and the miscellaneous group.

[3] Cooper, Edwards and Rosenstein, *Journal of Experimental Medicine*, March, 1929 xlix, 461.

[4] Miss Cooper has since segregated Type XIV from the Miscellaneous group.

One of these miscellaneous types, our present IV, originally isolated from the blood of a patient at Harlem Hospital, has been found in half the proportion of all patients as Type III, or 6 per cent. It is a virulent organism, killing more than one-third of its victims, and developing in horses, highly protective serum. It is widely distributed, being recognized by Griffith in England as his strain 10, and by Robinson fo Pittsburgh as his IV B strain.

It is our purpose to attempt to prepare polyvalent serums for these additional types, in addition to serum for Type I and Type II, and to administer it to patients early in the course of the disease either alone or with polyvalent serum for Type I and Type II. There will also be monovalent serums for the types to be used after one is recognized as the invader.

In Type III cases, the serum has not been useful. During 1926, our maximum Type III titre was 10 units against the stock culture. An efficient dose was not available. During 1927-28, we had a serum containing as much as two thousand units of Type III when tested against stock culture, but this serum had only 30 units of protection for a recently isolated culture. With the lapse of time, six months, the virulence of the cultures obtained from patients diminished, as did the size of the capsule, and the apparent titre of the serum became greater. Doctor Park and Miss Cooper have since found marked variation in the virulence of recently isolated cultures of Type III organisms. At present we have no efficient serum for Type III, in spite of having a potent serum against the laboratory culture. This is apparently due to the large capsules or to a difference in the character of the specific soluble substance. The strains collected are being studied with a view to further therapeutic attack.

The Serum

Considerable advances have been made in the production of serum, by reason of increased experience with

horses. One horse produced serum of 1200 units, Type I, per cubic centimeter. There have also been improvements in the methods of extracting and refining the serum.

When the protective serum was originally introduced, it contained on the average approximately 80 units per cubic centimeter. The contents of a vial which contained three ounces, or 90 cubic centimeters, was injected at each dose (7200 units). This was injected very slowly, and required considerable apparatus to keep the serum warm and uncontaminated. With the effective antibody, both inert and deleterious matter was injected, and repetition of such large doses of serum was harmful to patients and frequently occasioned serum sickness. At present, a 10 c.c. syringe is all that is required to administer serum, transferring even more protection than was present in the larger dose of crude serum. Occasionally an effective dose may be contained in 2 c.c.

This reduction in volume is brought about by precipitating with salt at a definite pH; all fractions but the globulins with which the antibody is associated are thus separated; the pseudoglobulins are then thrown down by dilution in large volumes of ice-cold acidulated water, or the salts are removed by dialysis. These methods were applied and perfected by Banzhaf, Felton and Sobotka. Deleterious and inert substances are removed, as there are few chill or temperature reactions, and very little serum sickness. Occasionally, there is some coughing, and flushing of the face, after the first injection. Similar reactions are sometimes observed after calcium chloride or salvarsan injections.

Each lot of serum is tested for chill production, before use, by injecting progressively increasing doses, up to 20 c.c., at intervals of eight hours, into arthritis patients, as a non-specific therapy. In such patients, the occurrence of a rigor, if it occurs, will prove beneficial. If chills occur, with therapeutic doses, the lot is rejected and returned for further refining.

When and How Should Serum be Administered?

The antibody solution obtained from the serum should be administered as soon as the diagnosis of pneumonia is made. In very early cases, absorption may be sufficiently rapid from intramuscular injections; we inject the serum intravenously because our patients are usually seen when the disease has lasted several days, and because this is the most effective method. Twenty minutes before starting treatment, the patients are tested with a drop of serum instilled into one conjunctival sac. In twenty minutes, those sensitive have a congestion of the conjunctiva. If they are not serum sensitive, the serum is administered intravenously immediately after the blood culture has been taken.

The Dosage

On admission, 10,000 units of Type I and of Type II are given. This is repeated every eight hours until the temperature has fallen below 102° F. In known positive blood culture cases, an extra dose of the serum should be administered, in order to make sure that an ample amount has been given; the time and the dosage may be increased to 15,000 or 20,000 units every four to six hours. More recently, we have checked the adequacy of our dosage by determining the presence of antibody by agglutination. This is done by rolling, in test tubes, the patient's serum with an emulsion of killed pneumococci of the invading type, in various dilutions. The serum should be given in amount sufficient to be detectable by this method.* Patients who are invaded with Type II, may require a larger dose, as this type apparently produces more specific soluble substance, or requires more antibody to neutralize it. This may be related to the difference in acid combining power of the specific soluble substance of Type I and Type II, revealed by Heidelberger's studies.

* Since delivering this lecture a method of microscopic agglutination has been developed by one of our co-workers, Mr. Albert B. Sabin, which has replaced this technic. It is more sensitive and more convenient. *Proc. Soc. Exp. Biol. and Med.*, March, 1929, xxvi, 492.

Evaluation

The benefit accruing from the use of serum may be seen by studying the entire experience, or by a study of the result in an individual case. An evaluation of the result is beset by the difficulty that 70 per cent of patients will recover by their own protective mechanisms. They produce, in a period, usually, from five to nine days, sufficient antibody to neutralize the substances which abet growth of the organisms.

Unfortunately, either by reason of a failure of the spontaneous protective mechanism, or by reason of the very great virulence of the invading pneumococci, 30 per cent succumb. It is impossible, at the onset, to determine clinically, what patients will recover. No one can say what patients will have their blood invaded by bacteria, nor can the invading type be determined clinically. To attempt any such clinical estimate is, in the present state of our knowledge, a dangerous and unscientific guess. Moreover, recovery is not entirely an immunological problem. Patients may overcome the invading bacteria, and yet succumb as the result of loss of aerating surface, from cardiac inadequacy resulting from the illness, or from disturbance in vital equilibria. This serves to complicate our problem.

Statistical Study—Standard Error

It is fortunate that the statisticians have placed at our service, when we are considering our serum experience, an instrument for determining the effect of serum in a sufficiently large series of cases, adequately controlled. One may readily ask what is a sufficiently large series of cases. Is it 50? Is it 100? The answer cannot be given in numbers until we know that the series must be of such a size that the ratio of the difference in the results of treatment must be twice the standard error. The standard error is to the probable error as three to two. There are two factors which change this ratio, an increasing difference between the results in serum and serumless cases,

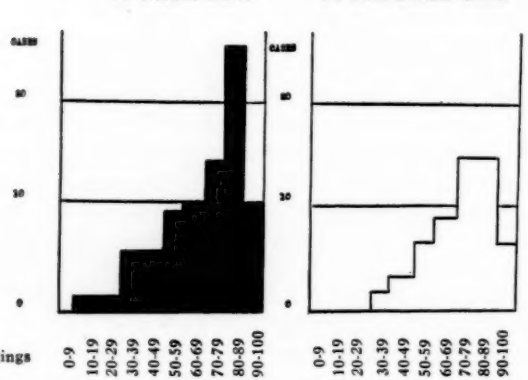
and the number of cases studied. We have chosen death and recovery as end points, about which none can dispute, though improvement from serum may have occurred in cases which subsequently die, as, from empyema, or exhaustion. Dr. Dublin of the Metropolitan Life Insurance Company has analyzed our data, and guided us in their interpretation.

For Type I cases, we obtained a sufficiently large series by our studies of 214 cases (see Table I), 105 in the control, and 109 in the treated series. We have made the conditions of the experiment as similar as possible, by rating the cases, so that we know that equally severe cases shall be in each series, determined by rating them, by taking alternate cases, and by having a uniform standard treatment. These conditions have been described in another presentation. I have prepared a graph showing the distribution of the cases, by rating, in each group, for Type I and Type II (see Fig. 2, a and b). It will be seen that, in general, the rating is similar.

FIG. 2 (A)

Littauer Pneumonia Fund—Harlem Hospital—1927-28

Type I.

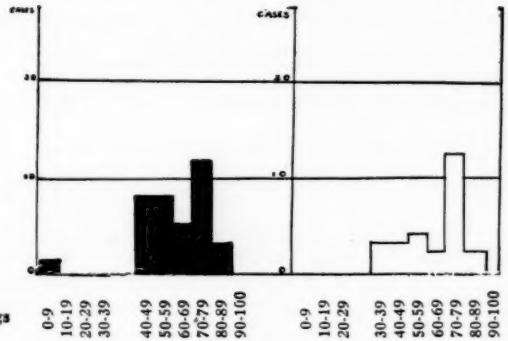


Distribution of cases according to ratings. Serum and non-serum cases,

FIG. 2 (B)

Type II.

35 Serum Cases 26 Non-Serum Cases



Distribution of cases according to ratings. Serum and non-serum cases,

The importance of concurrent control is shown in the graph of the results in two years' statistics. In 1928, both serum and serumless cases showed better results than in 1927. The mortality varies from year to year; therefore, only series of simultaneous cases can be compared (see Fig. 3). We have found, in our studies, that there is a reduction of mortality with serum, in Types I, II, and in what we formally classified as Group IV or the miscel-

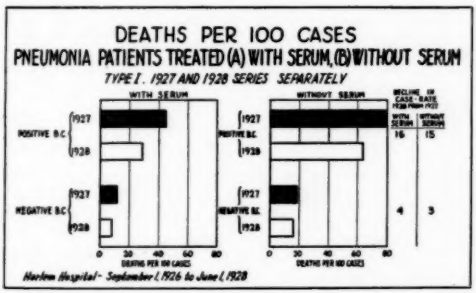


FIG. 3

Littauer Pneumonia Fund of New York University

Deaths Per 100 Cases

Pneumonia Patients Treated (A) With Serum and (B) Without Serum

Harlem Hospital. September 1, 1926 to June 1, 1928

1927 AND 1928 SERIES SEPARATELY

	(A) With Serum			*(B) Without Serum*		
	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths Per 100 Cases
Type I						
Total Cases						
1927-28	109	18	17	105	33	31
1928	54	8	15	52	15	29
1927	55	10	18	53	18	34
Positive Blood Culture						
1927-28	28	10	36	28	20	71
1928	17	5	29	14	9	64
1927	11	5	45	14	11	79
Negative Blood Culture						
1927-28	80	8	10	74	13	18
1928	37	3	8	8	6	16
1927	43	5	12	36	7	19
Type II						
Total Cases						
1927-28	56	13	23	61	18	30
1928	30	7	23	23	4	17.4
1927	26	6	23	38	14	37
Positive Blood Culture						
1927-28	14	7	50	11	9	82
1928	9	4	44	1	—	—
1927	5	3	60	10	9	90
Negative Blood Culture						
1927-28	42	6	14	47	9	19
1928	21	3	14	22	4	18
1927	21	3	14	25	5	20

laneous group. This reduction in mortality occurs whether the cases are treated early, within three days, or whether they are treated later in the course of the disease. For Types I and II, the result of treatment in those attended within three days of onset, and those who had been seen four days or more after the onset are shown in Figures 4 and 5. The improvement in mortality is slightly better in the early cases than in the late ones.

Physicians frequently withhold serum if the type is recognized later than the first few days. This is unfortunate, as frequently patients can be saved who are treated later, and even late in the disease.

The invasion of the blood stream may occur later than the third day, and such cases may have their blood stream rendered sterile by serum, as I shall show in the chart of a patient, later in the presentation. No one can tell, during the progress of the illness, how much protective substance has developed, what may be the body's capacity to develop it, or the eventual need. It seems safer to supply it in excess than to chance that any shall be lacking.

The statistics of Harlem Hospital show a definitely lower mortality for Type I and Type II; it is also shown by the combined statistics of Harlem, Bellevue and New York Hospitals (Figs. 6 and 7). The most marked difference in mortality is shown in the cases which have a positive blood culture, as the statistical analyses of my colleague, Doctor Rosenblüth, revealed (see Fig. 8). In fact, we have ceased, at Harlem Hospital, to alternate the use of serum in cases in which we find an invasion of the blood stream with Type I organisms, for it is felt that, for these cases, statistical proof has been given, and it is unjust to withhold an available life-saving procedure; the ratio of the difference to the standard error, in this type, is 2.4 to 1.

For Type I, I have prepared a chart showing our experience with serum and controls in which the thirty-four cases are studied as to result, and classified by days and number of colonies per plate (see Table II, page 360). I

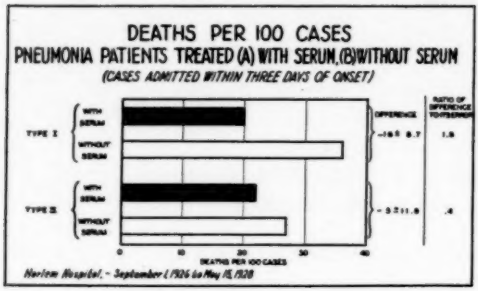


FIG. 4

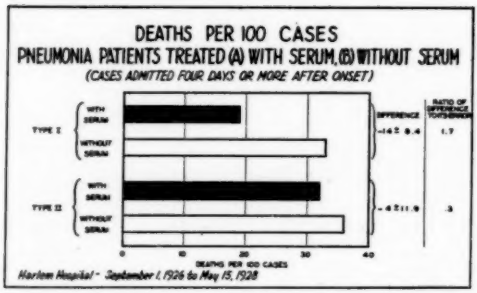


FIG. 5

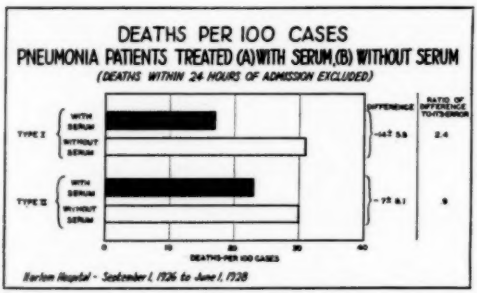


FIG. 6

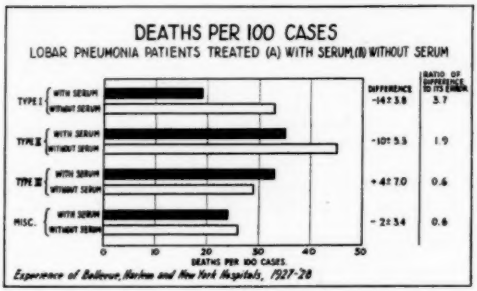


FIG. 7

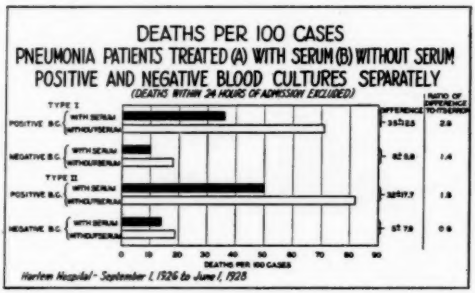


FIG. 8

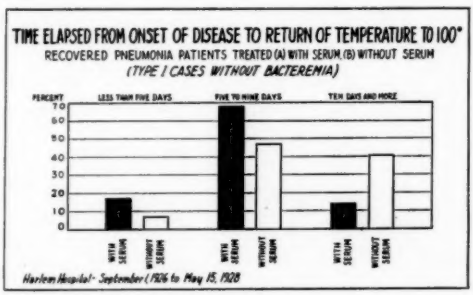


FIG. 9

Littauer Pneumonia Fund—Harlem Hospital—1927-28

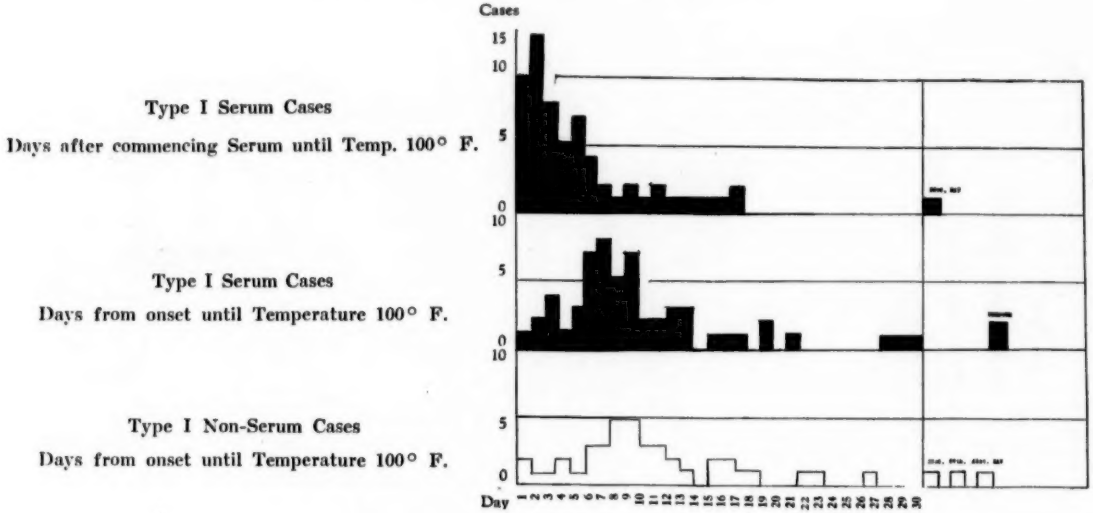

Cases
15
10
5
0
Type I Serum Cases
Days after commencing Serum until Temp. 100° F.
10
5
0
Type I Serum Cases
Days from onset until Temperature 100° F.
10
5
0
Type I Non-Serum Cases
Days from onset until Temperature 100° F.
Day
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

FIG. 10

have also given the experience with Type II (see Table III, page 63). For this type, I am less sure of my results as some fatal cases may have been sub-groups of II, now classified by Doctor Park and Miss Cooper as Type V and Type VI.

Duration

In those who recover, the duration of illness, with its hazards and destructive changes, is shortened. This is seen from an analysis of the diagram (Fig. 9) in which 16 per cent of the Type I cases to whom serum was given, had normal temperatures within five days, whereas only 8 per cent of the cases without serum had temperatures normal within five days. Sixty-eight per cent of the patients who had serum, had had their crisis between the 5th and 9th day, while only 48 per cent of those who had not received serum, had their crisis within that period. It required ten days or more, for only 12 per cent of the cases to whom serum had been given, to reach 100, while 40 per cent required this length of time when serum had been withheld (see Figs. 9 and 10).

Severity of Illness

More gravely sick patients are saved with serum than can be saved without serum. This is shown in Figure 11, page 45. Almost 40 per cent of the patients rated poor were saved with serum, while we saved none of those rated as poor, among those where serum was withheld. Seventy per cent of those rated fair, recovered where serum was employed, while without serum, more than half perished. With serum, in the patients rated good on admission, the death rate was 8 per cent, and without serum, it was 14 per cent. This general statement of better results is of prime interest to us as physicians and encourages us to use serum.

Confronted, however, with a particular patient suffering from pneumonia, we are beset by certain urgent questions. Shall we employ serum for this patient or is there some contra-indication? What are the contra-indications for serum treatment? When have we given enough serum?

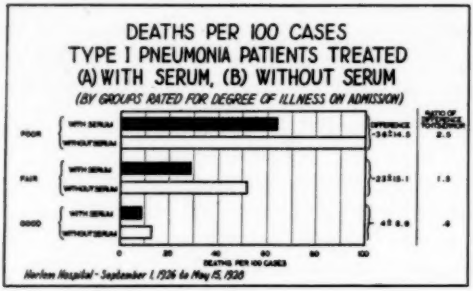


FIG. 11

Contra-Indications

We have withheld the serum from definitely moribund patients. We have not given serum intravenously to patients suffering from asthma, or with a history of horse sensitiveness. Otherwise, we have not withheld the serum. These cases, if they come in on the serum series are, of course, included in the serum group and counted as deaths against it, should they die. Lateness in the disease is not a contra-indication; anoxaemia is not a contra-indication, nor is cardiac irregularity or very marked rapidity; high blood pressure and low blood pressure are not contra-indications; organic valvular disease is not a contra-indication; neither is extreme age nor early youth a contra-indication.

We must reiterate that it is only after a complete bacteriological study of the cases, that we can assert positively the need for serum, but delay for such study, just as delay for throat culture reports in diphtheria, may spell disaster to our patients. On this account, we feel that any patient suffering from lobar pneumonia, should receive polyvalent serum, when that diagnosis is definitely established.

In order to answer the question whether enough serum has been given, let me show you what happens most frequently to the temperature (see Fig. 12). The temperature falls after serum has been administered. Those pa-

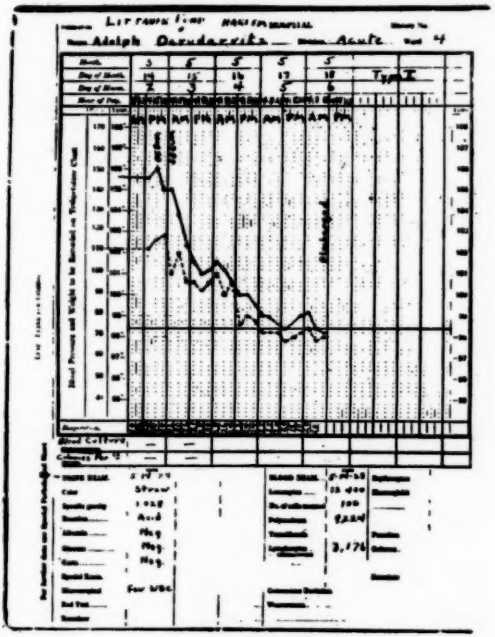


FIG. 12

tients, whose temperature has fallen, are not immediately well; there may be a secondary rise of temperature; in some of these cases, ample antibody is present, and in some, the process of resolution and of recovery from the effects of the severe intoxication must be overcome. At Harlem Hospital, in the serum series, the serum is persisted with in all cases until the mouse heart's blood has been examined. It is discontinued when this examination reveals neither Type I nor Type II. This usually requires 36 hours.

At times, a diagnosis and also the need for more serum may be made by determining the presence of antibody in the blood.[3] When known, large amounts of antibody of two

[3] Agglutinin is actually titrated.

types are injected, the disappearance of one from the serum and with only a slow reduction of the other is suggestive evidence that the infection is of the type which has disappeared. Antibody is then not revealed because it has been neutralized by the specific soluble substance in the blood. Serum is required until antibody can be demonstrated continually. This is shown in Figure 13, where A. D. T. indicates antibody test. This patient suffered from Type I pneumonia.

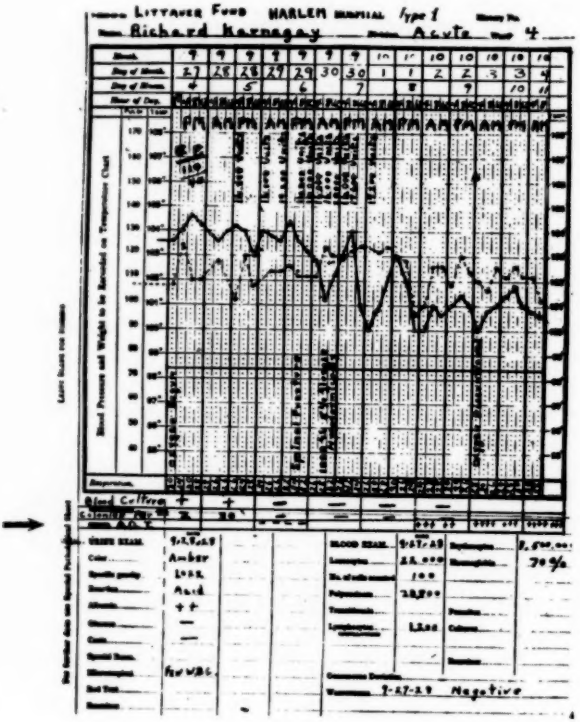


FIG. 13

Reactions

I will now take up the question of reaction. In most cases, the serum is given with as little immediate effect on the circulation as the injection of so much saline. In others, there is a slight flushing of the face, and in other cases, there is some difficulty with breathing, and a slight dry cough. Again, we may have a rise of temperature of .5 to 1.5 or even 3° F. which occurs immediately or in thirty to sixty minutes after the injection, and in some, a chill of varying severity, usually a very slight one. Such reactions occur, usually, after the first injection, much more rarely after the subsequent injections and possibly occur more frequently with certain lots of serum. There may be some condition in certain patients which predisposes them to reactions with any serum, or, at times, with serum which has previously not given chills. Serum sickness of slight degree has been present in some cases. At times, there has been an urticarial rash; at times, joint pains with a rise of temperature of several days' duration.

When have we given enough serum? I have prepared a chart to show the amounts of serum administered (see Fig. 14). In some there have been very great quantities given; in some, the early cases, smaller quantities have been used. In the administration of serum, there are always the unknown factors of how much protection has already been elaborated in response to the given bacterial stimulus, the ability of the body to continue adequate production of protective substance, as well as the unknown amount of specific soluble substance being produced.

In connection with the study of our cases, we have frequently noted a continuance of temperature, never very high, after there is an excess of antibody in the blood stream. This leads us to a discussion of what the antibody actually accomplishes. It is probable that the antibody neutralizes the specific soluble substance, and there may be some other mechanism for the destruction or neutralization of the general bacterial protein. As I have already said, antibody is given until the temperature is

FIG. 14

below 102° F. and the blood stream is sterile or until antibody can be continuously shown in the patient's serum.

FAILURES

In spite of the marked reduction in death rate observed in the series treated with serum, we must still account for one death out of five of our patients suffering from pneumonia. This I shall endeavor to do.

Frequently, patients seem to have obtained great benefit from serum, and nevertheless, they die. The blood stream may become sterile, the temperature may fall, and they die of anoxaemia, anhydremia and various complications. But aside from these factors, to the correction of which our present effort is directed, are there cases in which the serum fails, either to sterilize the blood stream, or to keep it sterile?

During the past year, we have greatly improved our typing methods, and discovered errors, especially in reference to Type II and Type III cases. Nevertheless, during the year, we have had four cases of Type I, and three cases of Type II, in which the serum was ineffective, failing to sterilize the blood (see appendix). Once the blood culture became positive after serum was injected, in Type I. This case recovered with additional serum. The record of another patient, without serum, who continued to have fever and died, is shown for contrast. Four cases continued to have a positive blood culture in spite of serum. Five cases had their blood sterilized, but died, and only one case had the blood sterilized spontaneously; he died. In this case, though the sputum typing was Type I, the blood showed streptococcus hemolyticus.

Two Type II cases had the blood culture become positive under observation, and died. One had much serum; it was probably administered too late. The other had the serum discontinued too soon. These cases were treated before the importance of serum antibody determination was realized. Two cases failed to become sterile. In one, the temperature fell at first, and later rose with increasing septicemia. Before death, there was excess antibody, and the patient's serum was protective for stock cultures. We might have done better if more serum had been given early. The serum should have been tested against the patient's own culture. At this time, we were not recognizing the IIa or IIb, our present Types V and VI. The other patient entered with an overwhelming septicemia. The organisms in the blood post mortem, may have been agonal.

In Type III cases, two patients died and one recovered in the serum group, and two patients died and one recovered in the non-serum group.

In the light of our present knowledge, it is useless to record the blood culture statistics collected for Group IV (miscellaneous group) without more definite knowledge of the new types involved.

After reviewing these failures, one may ask what does the serum accomplish? It confers a passive immunity against that type of organism for which it is intended. This immunity is brief, but it is available at the time of greatest need. It does not cause the pathological changes in the lung to disappear promptly. It does not prevent death from anoxaemia; it does not neutralize such substances as may be produced by autolysis of tissues, nor will it obviate the need for surgical evacuation of collections of pus. It does not take the place of careful nursing and skilful medical observation and treatment of distressing symptoms, as cough, sleeplessness and distention. Oxygen, administered continuously by metal nasal catheter, tent, or chamber, should be employed.

Since the serum is apparently so helpful in the treatment of pneumonia, what are the objections to its general use in private practice? What can be the objections? Many feel that the fatalities are so rare [and they may very well be, in any brief individual experience], that they can afford to chance the issue with general nursing care. This point of view was warranted when medicine had nothing of proven curative value to offer. Others object that the cost of serum is great, and a needless charge against patients who may possibly recover without the expense. It is true that the cost of serum, for the average case, may well be as much as fifty dollars, and may even be several times the amount. In comparison with the cost of surgical care, this is moderate. The cost of serum production is great and must remain so for the present. This is occasioned by the fact that it takes considerable time to raise the antibody content actively in horses to a point

where it is worth while to concentrate the serum for treatment. It takes from six to twelve months to immunize the horses, and their productive life is relatively brief, about two years from the time vaccination is commenced. The serum then becomes too weak in antibody content for use, or what most frequently happens, the horses die at that time as the result of the injections and frequent bleeding. They are productive for six to eighteen months and yield, on the average, a liter of refined serum each month, and this serum contains, on the average, one hundred doses per liter. Some horses may be vaccinated which are useless in serum production, and others may promptly produce serum of great potency. No one knows the reason for this difference. A splendid opportunity for philanthropy lies in the determination of the genetics of immunity production, especially as applied to the production of therapeutic serums. Besides this uncertainty in connection with choosing animals for inoculation, there are special hazards in the industry, such as epidemics among the animals, and spoilage during manufacture and transit.

Table IV shows the length of time that it took a number of horses to produce antibody of given titre, in response to vaccination. This immunity, thus produced actively in the horses, varies in amount, though the same stimulus was employed. When produced, it is transferred by serum treatment to patients.

Vaccines

This leads us to a consideration of the logic of administering vaccines to patients gravely ill. The theory of injecting vaccines for treatment assumes that the stimulus to active immunity is inadequate. It is difficult to see how adding more antigen can be of service in patients where the blood stream is already invaded. There has been no properly controlled and studied series of pneumonia patients submitted to vaccine treatment.

It may be objected that the serum treatment, with its frequent injections, its careful typing, its blood cultures

and its antibody tests, requires expert and special skill. That is true; at present, there is required a technic, and trained bacteriologists; in fact, a teamwork and devotion, with a ritual as elaborate, in its way, as that required for surgical operation. It requires, also, good serum of known titre. But the prize may be a human life, and is frequently a shortening of the illness, with its attendant pain and hazards.

It is hoped that the technic may be simplified, that better and cheaper serum will become available as the demand increases, and more horses are immunized. With more concentrated serum, larger doses may be administered, and antibody potent against more types will be given at the initial injection.

It is only by early diagnosis and prompt use of the serum in the hands of general practitioners, that the dramatic results we have witnessed can be extended, and mortality from pneumonia greatly reduced. As the result of delay, the need for the more elaborate procedures requiring special skill, are necessary.

General use of serum means a revolution in the outlook of physicians, upon the treatment of pneumonia. It makes them hopeful, and gives them, instead of a philosophy of watchful waiting, a directly curative agent with which if employed sufficiently early, they may terminate the disease. Only when this change in practice shall be accomplished, and there is country-wide lessened suffering, with death frequently held away, will those who are engaged in the work, and the generous donor of the Littauer Fund, feel repaid for their effort.

Statement of Serum Failures in 1927-28

Type I—Serum Case (Temporary Failures)

First blood culture Negative—Subsequent Positive

Name	*Age*	*Rating*	*Day Admitted*	*Day Positive*	*Remarks*
Naomi McKee *Hosp. No.* 3677—5/1/28	38 yrs.	57	3rd Blood Culture Negative	5th+ in broth	This blood invasion occurred with a recrudescence after temp. was below 100° F. for 20 hours. 48,000 units of serum had been given. The subsequent course lasted 48 hours and 164,000 units serum were given. Diagnosis rested on mouse heart's blood. Result: *Recovered.*

Type I—Non-Serum Case

First blood culture Negative—Subsequent Positive (for contrast)

Name	*Age*	*Rating*	*Day Admitted*	*Day Positive*	*Remarks*
Henry Fleming *Hosp. No.* 3304—1/8/28	34 yrs.	75	2nd Blood Culture Negative	5th+ in broth Plates 3 and 7 Colonies	Death with delirium and anoxaemia. Temp. continued high for eight days.

Type I—Serum Cases

With blood culture continuously Positive—Patients died

Name	*Age*	*Rating*	*Ill*	*On Admission*	*A.D.T.*	*Remarks*
John Lewis *Hosp. No.* 3487—4/1/28	28 yrs.	30 Admitted with pulmonary edema.	7 days	4/1/28 Broth + Plates 315-300 Colonies 4/2/28 Broth + Plates 4 and 3 Colonies	4/2/28	Serum given: 4/1 24,000 units 4/2 24,000 units 4/3 42,000 units 4/4 30,000 units Temp. fell to 98° after last dose. Found dead in bed at 8:35 a.m., six hours later.

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
Angel Garcia *Hosp. No.* 5681—5/23/28	49 yrs.	35 Distended Resp. 48 Restless Bilateral involvement	5 days	5/23 Broth + Plates 350-450 Colonies 5/24 Broth + Plates 1000-15000 Colonies	Received 100,000 units serum in 24 hours. There was no fall in temp. Post mortem chest culture Type I.

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
Sam Ripka *Hosp. No.* 3406—5/25/28	53 yrs.	30 Admitted with pulmonary edema. Temp. 103° F. Pulse 140	4 days	5/25 Broth + Plates 7 and 14 Colonies Miscellaneous and Type I.	Received 10,000 units serum Type I and 4,000 units Type II. Died in less than 8 hours.

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
James Stewart *Hosp. No.* 3536—4/20/28	35 Distended Pulmonary edema.	25	3 days	Broth + Type I Plates no growth	Serum given: 4/20 20,000 units 4/21 40,000 units Patient delirious. Temp. rose to 105°. Died 18 hrs. after admission. Post mortem lung culture pneumococcus Type I.

Type I—Serum Cases

Blood culture became Negative and patients died

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
Charles Henry *Hosp. No.* 3250—12/9/27	46 yrs.	65	2 days	Broth negative 3 colonies on one plate	Serum received: 12/9 12,000 units 12/10 24,000 units Temp. was 102° or below 12/11 and 12/12 but pulse continued rapid. On 12/13 temp. rose to 103° and death occurred with vomiting and distention.

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
John DeSylva *Hosp. No.* 107—2/21/28	52 yrs.	78	4 days	2/21 Broth + Plates 5 and 6 colonies 2/22 Broth neg. Peritoneum-Misc. Mouse heart's blood—I.	Serum given: 2/21 10,000 units 2/22 45,000 units A.D.T. negative 2/23 15,000 units Temp. fell after 1st dose, then rose and was high for 3 days, then low, occasionally reaching 102°. On 3/13, patient received additional antibody preparatory to operation. 3/29 Empyema pneumococcus Type I R.B.C. 3,040,000 Hb. 60% Had one transfusion. Asthenic, pale and delirious. Died 4/13/28.

Type I—Serum Cases

Blood culture became Negative and patient died

Name	*Age*	*Rating*	*On Admission*	*Remarks*
Bob Thornton	46 yrs.	30	3rd day Broth +	Patient received 95,000 units serum before
Hosp. No.		Left lung	Plates 34 and 45	A.D.T. positive and 30,000 units next day.
3501—3/19/28		anoxemia	3/20/28 Broth and plates sterile	Temp. continued high. Marked dehydration. Hb. 145%—Hematocrit 63%.

Name	*Age*	*Rating*	*Admitted*	*On Admission*	*Remarks*
John Scherer	59 yrs.	65	3rd day	3/8/28 Broth +	Patient received serum for three days.
Hosp. No.		SSS in		Plates 2 and 12	3/8—15,000 units
3447—3/8/28		urine		Colonies	3/9—15,000 units
				3/10/28 Broth —	(Temp. fell below 102°)
					3/10—60,000 units
					3/11—45,000 units
					Temp. fell to normal but patient became progressively weaker and died next morning.

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
Emanuel Johnson	45 yrs.	90	5 days	4/19 Blood C. —	4/19 20,000 units S
Hosp. No.				4/26 Broth +	4/20 20,000 units
3571—4/19/28					4/21 20,000 units
					4/22 10,000 units
					A.D.T. negative
					4/23 20,000 units
					A.D.T. negative
					4/25 10,000 units
					A.D.T. negative
					4/26 8,000 units. Pn I.
					4/27 Patient died with temp. normal, pulmonary edema and foul smelling sputum. Had had, since 4/23, a stomatitis and sublingual glossitis and hiccough.

Type I—Serum Cases

Blood culture Negative and patients died

Name	*Age*	*Rating*	*Ill*	*Remarks*
Esperanza Suvio *Hosp. No.* 3648—4/20/28	31 yrs.		7 days	Serum given: 4/27 20,000 units 4/28 50,000 units 4/29 55,000 units On 4/28/28, temp. fell to 100°—on 4/29/28, temp. rose to 106°. Death with wild delirium, and pulmonary edema. Post mortem chest culture showed miscellaneous group organisms.
Name	*Age*	*Rating*	*Ill*	*Remarks*
Fred Sorrentino *Hosp. No.* 1009—1/31/28	28 yrs.	55	4 days	Marked asthenia—clubbed fingers—apical involvement. Right lower lobe pneumonia. Serum given: 1/31 32,000 units 2/1 90,000 units 2/2 50,000 units 2/3 60,000 units 2/4 20,000 units Temp. fell from 106° to 102°. Recrudescence on 2/2 uninfluenced by serum. Death with pulmonary edema.

Type I—Non-Serum Cases

Blood culture became Negative but patient died

Name	*Age*	*Rating*	*On Admission*	*Remarks*
Michael Acosta *Hosp. No.* 3197—11/4/27	30 yrs.	68	11/4 Blood Broth + Plates 35-10 Streptococcus hemolyticus colonies 11/5 Blood Broth negative Plates 33-15 Streptococcus hemolyticus colonies + 11/7 Blood Broth negative	Temp. fell by crisis 11/7. Died next day with temp. 102° and pulse 160.

Type II—Serum Cases

Negative blood culture became Positive—patient died

Name	*Age*	*Rating*	*Ill*	*Remarks*
Harry Williamson	46 yrs.	50	1 day	2/25 Blood culture negative.
Hosp. No.		Alcoholic		Received 4,000 units serum
3443—2/25/28				2/26 Received 16,000 units serum
				2/27 Received 30,000 units serum
				2/28 Received 50,000 units serum
				2/29 Blood Cul. Broth positive
				Plates 14 and 20
				Received 85,000 units serum
				A.D.T.—1/5000 unit protection. Temp. fell to 99° F.
				3/1 Received 80,000 units serum
				A.D.T. negative
				Died next day—pulmonary edema. Patient became delirious four hours after last dose serum. Temp. 101° F.

Name	*Age*	*Rating*	*Admitted*	*Remarks*
Jeff Miller	39 yrs.	57	1st day	3/13 Blood Culture negative. Sputum miscellaneous.
Hosp. No.				Blood C. II.
3473—3/13/28				3/17 Broth + Plates neg.
				3/18 Broth + Plates 14 and 22 colonies
				3/19 A.D.T. negative
				Serum given
				3/13 10,000 units
				3/14 20,000 units
				3/15 30,000 units
				3/16 10,000 units
				3/17 None
				3/18 120,000 units
				3/19 132,000 units
				Post mortem heart's blood contained gram positive diplococci. Patient died with edema of lungs and cyanosis. (Possibly Type 5 or 6).

(Possibly Type 5 or 6).

Type II—Serum Cases

Blood culture did not become sterile—patients died

Name	*Age*	*Rating*	*Ill*	*Remarks*
Paul Cotton *Hosp. No.* 3388—2/12/28	35 yrs.	55 Cyanosed and distended	4 days	2/12 Broth + Plates 15 and 22 colonies 2/14 Broth + Plates 90 and 122 colonies 2/15 Broth + Plates 500+ 500— colonies Patient was given 10,000 units serum on admission. Temp. fell to 101°. On 2/14, temp. rose to 104°—patient was given two doses 8,000 units of Type II. On 2/15, patient received at: 6:30 a.m. 8,000 units Type II 12:45 p.m. 26,000 units Type II A.D.T. for II —, —, —, — 3:15 p.m. 50,000 units A.D.T. for II + +, +, +, — 8:00 p.m. 30,000 units A.D.T. for + +, + +, + +, — 1/50000 units protection for stock culture Type II Patient died with pulmonary edema.

Name	*Age*	*Rating*	*Ill*	*On Admission*	*Remarks*
Edwin Ashley *Hosp. No.* 3602—4/30/28	42 yrs.	5 Alcoholic Pulmonary edema and convulsions	6 days	4/30 Broth + Each plate 5,000+	Received 10,500 units Type II in polyvalent serum; one dose given, though moribund. Autopsy—Type II recovered from both lungs.

Name	*Age*	*Rating*	*Ill*	*Remarks*
Ampero Cotto *Hosp. No.* 3483—3/30/28	36 yrs.	43 Distended	5 days	3/30 Broth + Plates 29 0 colonies 3/31 Broth + Plates 30 57 colonies 4/1 Temp. reached 100° in morning and 103° in p.m. 4/2 Broth + Plates 1 2 colonies 4/3 Broth + Plates 67 51 colonies Temperature reached 107°. Patient died.

TABLE II

LITTAUER PNEUMONIA FUND OF NEW YORK UNIVERSITY HARLEM HOSPITAL

Type I—Blood Culture (S) Serum and (C) Control Cases

Number of Colonies in 1st blood culture and in subsequent daily blood cultures and result

(R—Recovered; D—Died)

Day of Illness	*7 Cases* *Broth Only*	*12 Cases* *Less than* 10 Colonies	*4 Cases* 11 *to* 19 *Colonies*	*5 Cases* 21 *to* 30 *Col.*	*6 Cases* 51 *Colonies and over*
1				C D 6-23	
2	S R 1st cul. neg. Positive 3rd day in hosp.			S R	
3		SS RR C D (Positive on 2nd day in hospital)		S R	
4	S D S D	SS RR CC RD	C D C 3,0 R		C D Several thousand C D 160,300,1000 250,15,5
5	C R	S R C 7,0 R	S R		C D 82-5, 5, 2, 0
6	C R	S R C 7,0 R		S R	C D 400-1300 C 800 D
7	C R				
8	C D Positive after 7 dys. in hosp.				S D 307-3
11			C D 1st day—400 2nd " 1000		
13		S R			
15				C D Only in Broth	

TABLE III

LITTAUER PNEUMONIA FUND OF NEW YORK UNIVERSITY HARLEM HOSPITAL

Type II—Blood Culture (S) Serum and (C) Control Cases

Number of Colonies in 1st blood culture and in subsequent daily blood cultures and result

(R—Recovered; D—Died)

Day of Illness	*Broth Only*	1 *Case* *Less than 10 col.*	3 *Cases* *10 to 19 col.*	1 *Case* *50 col. and over*
1	S R			
	S D (Neg. until 4th day then 18			
2			S. D Positive after 1st day	
4	C R			
5	S R		S. D 106-500	
6	S R			
7				S D 5000
8			S R 4, 1, 1, 4, 5, 12, 0	
9		S R		

TABLE IV

LITTAUER PNEUMONIA FUND—NEW YORK UNIVERSITY

Production of Antibody in Horses. Potency or Antibody Titre developed, by months.

Horse No. and Antigen Type	Month 1	2	3	4	5	6	7	8	10	14
59 I and II		100-I							200-I	
		50-II		100-II						
42 I and II			50-I	100-I						
			25-II							200-II
47 I and II		100-I					200-I			
				100-II			200-II			
105 I and II			100-I	200-I						
	50-II			100-II			200-II			
228 I and II		100-I*								
		200-II*								
227 I and II			50-II		25-I					
226 I and II			50-I							
			50-II							
224 I and II					100-I	200-I				
147 I and II	50-II	50-I		100-I			200-I			
170 I		100-I	200-I					500-I		
223 II			100-II							
222 II			50-II							
221 II					100-II					
220 II				100-II						

* 2½ months.

TO THE GREAT CLINICIAN FRIEDRICH VON MÜLLER ON HIS SEVENTIETH BIRTHDAY

(Translated by Mrs. Ephraim Shorr)

Great clinicians place their mark on a city. The professorship of internal medicine in particular, which now, as ever, represents the immovable mid-point of medicine and hygiene, emits rays which penetrate even those remotest strata of culture which have scarcely any apparent connection with medicine. The personality of the internist stamps the understanding of entire generations of physicians; it determines the increasingly comprehensive understanding of the preservation of health and prevention of disease throughout the whole country; and it shapes the public sanitary regulations. It attracts serious men from all parts of the world no less than do famous artists and art schools.

Geheimrat Professor Friedrich von Müller, the director of the Munich Hospital on the left bank of the Isar and head of the Second Medical University Clinic, is this kind of a personality of wide cultural significance. September 17th is the seventieth anniversary of his birth. Seventy years are long when one considers them only as a life that has been led—they are a short span of time when one considers the work which Müller has accomplished, when one reflects upon the lasting power which his teaching and his labor have exerted over countless men.

He comes from an old medical family which can be traced back to a great-great-grandfather. The father was for a long time the director of the medical division of the Augsburg Hospital.

Müller was born in Augsburg. He studied in Munich and Würzburg, and in Würzburg he obtained his first position as assistant to Carl Gerhardt. Later he went with him to the Charité Hospital in Berlin and in 1888 established himself there as a lecturer. In the following year he was appointed director of the Medical Polyclinic at

Bonn; the next year he became head of the Breslau Medical Polyclinic; and in 1892, by appointment as professor-in-ordinary, he became director of the Medical Polyclinic at Marburg.

Müller has always spoken with especial pleasure of his clinical activities in Basel, where he worked from 1899 until 1902. A great many celebrated physicians assisted him in his clinic, such as Professors Otto Neubauer (Munich), von Bergmann and Langstein (Berlin), and Falta (Vienna). In 1902, after the death of von Ziemssen, Müller received the directorship of the Second Medical Clinic in Munich and succeeded Bauer as head of the hospital on the left bank of the Isar.

In this position from the very beginning he was able to exert a great influence. It was his activity as a teacher which made the Munich medical faculty famous throughout Germany and beyond, attracting students from foreign countries. We pupils of Müller realize to-day, as we have always done, that the Müller ideal forms the nucleus of our medical knowledge. Objectivity and sincerity, as opposed to any nonsense and obscurantism, were the characteristic features of his teaching and of his understanding of natural phenomena and the art of healing. It is illuminating that in his necrology upon his own teacher, Gerhardt, Müller especially emphasized his intrinsic truthfulness and genuineness. This is in keeping with Müller's own character.

Müller's scientific works cover all territories of internal medicine and clinical physiology. His fundamental researches on nutrition and metabolism, on kidney disease and asthma, nerve disease, heart, jaundice, etc., have become sign-posts in therapeutics. His "Handbook of Medicinal Clinical Diagnosis," edited in collaboration with Seiffert, is a masterpiece of concentrated power of expression and is widely used. Müller early recognized the importance of chemistry in clinical diagnosis, and chemistry as a help in his laboratory has always played a leading part.

As during the past decades, Müller's medical skill to-day draws many sick people to Munich, seeking help. Both before and after the war, extended travel in the United States permitted the spread of his influence there and to other countries as well.

More than twenty years ago Müller was raised to the nobility. Last year he was made Honorary Citizen of the City of Munich. Müller's great services as rector of the university during the difficult and responsible years of 1918 to 1920 are unforgettable.

The many people to whom Müller in his active life has brought health, and thereby happiness, the many pupils he has prepared for their task in life, to-day think of their leader and helper with especial gratitude. With them we wish with sincere hearts that Friedrich von Müller may pursue for many years to come, in complete health and vigor, his busy but satisfactory activities, to the higher glory of Munich, to the happiness of his relatives, to the comfort of his patients, and to the satisfaction of his pupils and his friends.

W. SCHWEISHEIMER

From the *Münchener Neueste Nachrichten,*
September 15, 1928.

OSLERIANA

The Nematode Genus "Oslerus" (Hall, 1921). In 1877, Osler described a verminous bronchitis in dogs, due to a nematode worm, discovered and described by him as *Strongylus canis bronchiglis* and subsequently named *Filaria osleri* by Cobbold (1879). In 1921, M. C. Hall erected this into an ovoviviparous nematode genus *Oslerus,* with Osler's original worm as the generic type (*Oslerus osleri*). In the same year, L. Travassos added two new Brazilian

species, *viz., O. barretoi* and *O. gordius,* found in the lungs of South American lemurs. In 1928, Dr. Hans Vogel adds two more species, *viz., O. cynopitheci,* found in the body of an imported monkey (*Cynopithecus Maurus*) in the Hamburg Institute of Tropical Diseases, and *O. felis,* found in the bronchi of a South American ocelot. A full account of the whole matter, with the pathological changes produced by infestation and references, will be found in Dr. Vogel's interesting paper (*Centralbl. f. Bakteriol.,* 1. Abt., Jena, 1928, CIX, 430-444, 1 pl.).

F. H. GARRISON.

COMMITTEE ON PUBLIC HEALTH RELATIONS

SUPERVISORY POWERS OF THE STATE BOARD OF CHARITIES

Report of
The Committee on Public Health Relations

The Department of Charities of New York State came into existence by an Act of the Legislature passed on May 23rd, 1867, as "The Board of Commissioners of Public Charities." In 1873 the name was changed to that of the "State Board of Charities." It was set up to safeguard the welfare of the inmates of the State charitable and correctional institutions, as well as the expenditure of State appropriations. By the original Act the commissioners were given authority to visit and inspect all the institutions in the State receiving State aid, except prisons. In 1873 the powers and duties of the Board were extended and the Board and the several Commissioners were given the power to visit and inspect any charitable, eleemosynary, correctional or reformatory institution within the State (excepting prisons) irrespective of whether or not these institutions were in receipt of State aid or were maintained by municipalities or otherwise, and "also to visit and inspect any incorporated or private asylums, institutions, homes or retreats, licensed for the detention, treatment and care of the insane, or persons of unsound mind." The law specifically authorized the Board to collect information concerning those who receive aid from private charity and to present to the Legislature its views relative to the best methods of caring for the paupers and destitute children. Following the exposure of wilful neglect of children in some of the incorporated child-caring institutions, the Legislature in 1883 passed an amendment to the law regulating the incorporation of benevolent societies whereby a written approval by the State Board of Charities was required before the certificate of incorporation of any society having for its purpose

the care or disposal of orphan, pauper or destitute children could be filed and the corporate entity created.

For some time it had been a misdemeanor to maintain any unincorporated maternity hospital, lying-in asylum or home for children, without obtaining a license from the board of health of the locality in which the institution was situated. In 1894 section 288 of the Penal Code (now section 482 of the Penal Law) was amended making it a misdemeanor for any person to maintain a maternity hospital, a lying-in asylum or a home for children without a license from the local board of health if such an institution were not incorporated, and in case of incorporated institutions, without the written approval of the State Board of Charities of such incorporation having first been obtained. The amendment further provided that proceedings might be instituted for the cancellation of any certificate of incorporation of such an institution previously filed and the dissolution of such a corporation.

It was likewise in 1894 that an amendment was passed (Chapter 256 of the Laws of 1894—amendment to section 1, chapter 95 of the Laws of 1889) providing that the organization of a corporation for the establishment and maintenance of hospitals, infirmaries, dispensaries and homes for invalids, or aged and indigent persons must have the approval in writing of the State Board of Charities before the certificate of incorporation might be filed. Although hospitals once they were established had been subject to the visitation and inspection of the Board since 1873, the organization of new corporations for hospital purposes had not been made subject to the approval of the State Board of Charities until the enactment of this statute.

In the revision of the State Constitution in 1894, a provision was incorporated empowering the State Board of Charities to visit and inspect all charitable institutions in the State, whether public or private. This embraced public as well as privately endowed hospitals. The right to inspect hospitals for the insane was vested in the State

Commission in Lunacy and that of the prisons in the State Commission of Prisons.

The basic principle underlying all the above mentioned statutes and the constitutional provision is that the State has a responsibility for the welfare of the inmates of all charitable institutions and a duty to protect them. This duty can be discharged only if the proper agency of the State be given the right to inspect all the charitable institutions and to ascertain the conditions under which the inmates are taken care of. The State Charities Law of 1895 was drafted on the basis of the aforesaid constitutional provision. Under this law the duties of the State Board of Charities are defined as follows:

"It shall be the duty of the State Board of Charities to visit, inspect, and maintain a general supervision of all institutions, societies, or associations which are of a charitable, eleemosynary, correctional or reformatory character, whether State or municipal, incorporated or not incorporated, which are made subject to its supervision by the Constitution.

The Board may, by order, direct an investigation by a committee of one or more of its members of the affairs and management of any institution, society or association, subject to its supervision, or of the conduct of its officers and employees, and the Commissioner, or Commissioners, so designated to make such investigation, are hereby empowered to issue compulsory process for the attendance of witnesses and the production of papers, to administer oaths, and to examine persons under oath, and to exercise the same powers as belonged to referees appointed by the Supreme Court." (Chapter 771, Laws of 1895).

In the same year, 1895, the Membership Corporations Law was enacted whereby the provisions of the previous statutes requiring approval of incorporations by the State Board of Charities before incorporation could be effected, were continued if the purposes specified the erecting, establishing and maintaining a hospital, infirmary, dispensary, home for invalids, aged or indigent persons, the care of orphan, pauper or destitute children, the establishment or maintenance of a maternity hospital or lying-in asylum where women may be received, cared for or treated during pregnancy or during or after delivery or for the boarding or keeping of nursing children. These provisions are continued, though stated in somewhat different lan-

guage, in the present Membership Corporations Law, which was materially revised in 1926. The State Charities Law was further amended in 1896 and the general powers and duties of the Board were made even more explicit. This statute, however, in defining the powers of the Board followed the language of the constitution and did not contain the words "whether receiving state aid, or maintained by municipalities or *otherwise,*" which appeared in the statute of 1873. Had that or a similar phrase been incorporated in the State Charities Law of 1896 (Chapter 546), as the Legislature had the right to do under the authorization of Article VIII, paragraph 15, that the Legislature may confer on the board any additional powers not inconsistent with other provisions of the Constitution, the decision of the Court of Appeals in the People ex rel. v. N. Y. Society for the Prevention of Cruelty to Children, would undoubtedly have been different, if, indeed, the proceeding had ever been instituted. The Legislature at the present time has full power to remedy the situation. In addition to the provisions of paragraph 15 of Article VIII, just referred to, paragraph 3 of Article V of the Constitution, provides that subject to the limitations contained in the Constitution the *Legislature may from time to time assign by law new powers* and functions to departments, officers, boards or commissions contained or created under this constitution, and increase, modify or diminish their powers and functions and that no specific grant of power by the Constitution to a department shall prevent the Legislature from conferring additional powers upon such department.

In 1899 the Dispensary Law was passed with the provision that the State Board of Charities "shall issue licenses to dispensaries and make rules and regulations in accordance with which such dispensaries shall furnish and applicants obtain medical and surgical relief, advice or treatment, medicine or apparatus." Just as the other acts pertaining to powers and duties of the Board, this law likewise is general in its application to all institutions, whether in receipt of public funds or not. In 1928 the

law was further amended and the Department of State Charities established, the head of which is the State Board of Charities. The duties of the Department are defined as follows:

"1. To carry out the directions of the state board of charities with respect to visitation, inspection and supervision of institutions, which by law or the constitution, are made subject to the visitation of the Board. As used in this section and sections nineteen, twenty and twenty-two of this chapter, the term 'institution' includes any corporation, society, or agency or association which is or may be subject to such visitation, inspection or supervision.

2. To aid in securing the just, humane and economic administration of all institutions subject to such visitation.

3. To advise the officers of such institutions in the performance of their official duties and as to the best measures for the care and relief of their inmates and beneficiaries.

4. To aid in securing the erection of suitable buildings for the accommodation of the inmates and beneficiaries of such institutions.

5. To investigate the management of such institutions and the conduct and efficiency of the officers or persons charged with their management, and the care and relief of the inmates or beneficiaries of such institutions.

6. To aid in securing the best sanitary condition of the buildings and grounds of all such institutions, and advise measures for the protection and preservation of the health of the inmates and beneficiaries.

7. To aid in securing the establishment and maintenance of suitable industrial, educational and moral training in such institutions.

8. To investigate the condition of the poor seeking public aid and advise measures for their relief.

9. To administer the laws providing for the care and support of state and Indian poor persons and the removal of alien and non-resident poor persons.

10. To collect statistical information with respect to the property, receipts, expenditures and activities of all institutions subject to its visitations and the number and condition of their inmates and beneficiaries, and with respect to the poor receiving public relief and such other matters relating to dependency, juvenile delinquency and public and private charities as the board may deem advisable."

On several occasions the powers of the Board were challenged, the Courts sustaining the Board until the adverse decision in the "Gerry Case" handed down by the State Court of Appeals. Expressing the opinion of the majority of the Court Justice O'Brien declared that "the

charity with which the State is concerned . . . . consists in the distribution of relief or public aid, the fruit of taxation levied alike upon the willing and the unwilling. The right of visitation and regulation applies only to those institutions, public or private, through which the State fulfills this function. They alone are within the reason of the law, and consequently within its scope and operation." And then, "a charitable institution within the meaning of the constitution *and the statutes* must be one that in some form or to some extent receives public money for the support and maintenance of indigent persons. By public money is meant money raised by taxation not only in the State at large but in any city, county or town."

"The defendant" (The New York Society for the Prevention of Cruelty to Children) "receives under the charter of New York the sum of $30,000 annually from the city treasury to promote the objects of its organization. But in receiving and disbursing that sum of money, it neither receives nor administers any charity, but is simply allowed something by the city for doing work that otherwise would devolve, as we shall see hereafter, on the police department and which the society can do better and with much less expense than the police."

This decision was rendered on January 9th, 1900. Counsel for the State Board of Charities had urged upon the Court that this Society was subject to the inspection of the State Board of Charities because of the fact that it received exemption from taxation. The Court dismissed this argument with the following statement:

"The fact that the property of this corporation is exempt by statute from taxation only shows that it enjoys a special privilege in common with a great many other corporations that no one can claim to be of a charitable nature."

This decision has limited the original scope of the functions of the State Board of Charities. It has removed from its inspectional powers a considerable number of institutions. It has rendered the knowledge of the Board

fragmentary in relation to the extent and character of charitable work throughout the State and has deprived the State of the valuable statistical information with regard to the cost and the results of the work of a large number of charitable institutions, including hospitals. Only those hospitals come within its jurisdiction which derive any revenue from public sources.

It does not seem to be maintained anywhere in the opinion of the Court of Appeals that the Legislature did not have power to confer upon the Board the additional powers of visiting and inspecting all charitable and reformatory institutions whether supported in whole or in part by public funds, but merely that the Legislature had not made such provision. As a matter of fact Chief Judge Parker's opinion in concurrence, stated that

"*If the Legislature,* from which this relator originally obtained the power which has recently been incorporated in the Constitution, but on no broader lines than the legislative grants of authority" (Chapter 546, Laws of 1896) "deems it wise to give to the relator" (State Board of Charities) "the right of visitation and to make rules and regulations for this defendant, it can do so. And if later experience shows that the power is being exercised unwisely and to the serious detriment of a great public work, its grant of authority can be revoked. Neither the constitution nor the statutes have undertaken to give a definition of a charitable institution or corporation. That has been left to the courts, *and if the definition of the courts be not broad enough to include as many institutions as the Legislature deems advisable, it can by further enactment bring in such others, or indeed every institution, corporation, society or association having for its purpose the promotion of the public welfare,* whether their object be the enforcement of laws for the protection of children, the prevention of cruelty to animals or the accumulation of funds and their application for the purpose of foreign and domestic missions."

With the growth of endowments and the lessened need of many charitable associations to rely on municipal or county subsidies, the number of institutions coming under the supervision of the State Board will gradually decrease, and the entire fundamental purpose of the law, asserting the State's concern in the welfare of inmates of charitable institutions, will be frustrated, if by legislative action the effect of the "Gerry Case" decision be not nullified.

As a result of this decision several anomalies have developed. The Board's approval is essential for the incorporation of a charitable institution under the Membership Corporations Law. The incorporation exempts it from taxation but if the institution does not directly receive public funds, it may violate purposes for which it was created; being entirely outside the supervision of the Board it is not subject to any control whatever, by any administrative State department. The second anomaly in the case of hospitals lies in the fact that under the Dispensary Law the State Board of Charities has a right to inspect and demand reports from the out-patient department of the hospital, which otherwise is outside its supervision, because the hospital does not receive tax funds. Thus the State Board of Charities has authority over one part of the institution and no official rights whatever in the other part of the same institution.

The Committee on Public Health Relations of The New York Academy of Medicine is of the opinion that legislation should be sought which would restore the original powers of the State Board of Charities and which will enable the Board to exercise supervision over all charitable institutions in this State and over all tax-exempt hospitals whether in receipt of public tax funds or not.

It is the conviction of the Committee that no place where the sick are congregated should be without supervision of some kind on the part of the State or local authorities.

The Committee therefore strongly recommends that steps be taken to secure an amendment to the State Charities Law which would permit the restoration of its original powers to the Board of Charities. The Committee is of the opinion that as soon as possible similar powers of inspection and supervision should be given to the proper authorities to be exercised in relation to all proprietary hospitals, sanatoria, nursing homes and other institutions for the care of the sick.

RESOLUTION IN HONOR OF DR. DANA

Unanimously Adopted by the Committee on Public Health Relations, February 5, 1929

In 1858, there was established by the Council of the Academy a section on Public Health. In 1908 a Committee on Hospitals was appointed by the President of the Academy, and in 1910 a similar committee was appointed for the purpose of representing the Academy at the municipal budget hearing before the Board of Estimate and Apportionment. These two committees were merged into a single one in May, 1911. The section on Public Health had failed to interest any considerable number of the Academy Fellows and was not functioning in an effective manner. Accordingly certain of the members of the Academy who had an interest in Public Health matters recommended to the Council that the section be abolished and some other plan be adopted to increase the Academy's usefulness in regard to public health problems. This recommendation was adopted by the Council and a plan proposed whereby the function of the Public Health section and the two hospital committees should be carried on by a single standing committee. On October 22, 1911, this committee, known as the Public Health, Hospital and Budget Committee was established by the Council. It seemed at that time that the Council felt it was essential that there should be a definite liaison between this newly formed committee which consisted chiefly of the younger and active men of the Academy, and the Council, so that the Council could have a guiding hand in the policies of the Committee. Accordingly the Council appointed as Chairman, Dr. Charles Loomis Dana, who for years had been actively associated with the affairs of the Academy, as Vice-President in 1901-1903, President in 1905-1906 and who was at the time a member of the Board of Trustees.

One of the first decisions made by the Committee was the determination to engage an Executive Secretary in order to secure continuity of action and under Dr. Dana's

leadership the Committee was able to secure funds for this purpose. From that time until 1925 the Committee was able to carry on this work only because the Chairman, Dr. Dana, was able to secure donations for its support.

His untiring interest, clear mind and cool impartial judgment soon brought to the Committee a sense of stability. With the interest of the Academy and the Public Health Committee always at heart, Dr. Dana frequently brought his own wise judgment to bear in tempering the views of some of the younger and more impulsive members of the Committee and at other times showed unusual foresight in furthering a forward looking project which did not always have the immediate support of the members of the Committee. Under his leadership the Committee quickly acquired and has constantly maintained a very large and authoritative influence in public health and hospital matters. It has been able to do this particularly because of his insistence on a thoroughness in its study of problems and an impartial judgment based on facts. The example of his own idealism and high principles has served as a guiding light for his associates. Dr. Dana's activities through the Public Health Committee soon brought to him the respect, admiration and affection of a considerable number of the Fellows of the Academy who gave to him loyalty and unswerving support. Their admiration and respect were evidenced by the tributes paid to him at a complimentary dinner held at the University Club in 1926, at the end of his fifteen years of service as Chairman of the Committee.

It is with mingled feelings of regret and sadness that the Committee learned that Dr. Dana had decided to lay down the burdens of the important office at the end of the year 1928. The following resolution expresses the sentiments of the Committee:

Resolved that the members of the Public Health Relations Committee of The New York Academy of Medicine hereby tender to Dr. Charles Loomis Dana who for seven-

teen years and a half has been Chairman of this Committee, their expression of loyalty, admiration, respect and affection, and their appreciation and gratitude for his earnest endeavors and for his eminent and distinguished leadership as Chairman of this Committee, and express the hope that he will continue as a permanent member of the Executive Committee.

COUNCIL NOTES

At a meeting of the Council held January 30, 1929, the publication of the following resolutions passed at a meeting of the Trustees held on January 30, 1929, was authorized:

Acknowledgment of Endowment

RESOLVED, that the Board of Trustees of The New York Academy of Medicine hereby acknowledges receipt of $500,000. from the Rockefeller Foundation making a total of $1,000,000. received to date on account of endowments and the sum of $12,500. for expenses toward the educational work of the Academy for the year 1928. The Trustees desire to record again their deep appreciation of the grants made by the Rockefeller Foundation, and it was also

Acknowledgment of Donation

RESOLVED, that the Board of Trustees and the Council of the Academy hereby request that Dr. John A. Hartwell transmit to his anonymous friend the very deep appreciation of the Board and Council of his generosity and to assure him that were it not for this donation the work in the Library would be seriously handicapped.

Medical Broadcasting

A report of the Committee on Discipline and Medical Information Bureau was read at a meeting of the Council held February 28, and the following recommendations were approved:

That the Academy approve of Fellows giving addresses over the radio on medical subjects, provided that the subject matter be typewritten and submitted to the Medical Information Bureau for editing and approval at least two weeks prior to the giving of the address.

That when such address is given, it be announced that it is given with the approval of The New York Academy of Medicine.

That when the time of the Health Speakers Service is available, the Academy approve of addresses being made under these auspices.

That when radio time is offered by industrial corporations, the Medical Information Bureau consider each case on its merits, and that no Fellow should give a radio address under commercial auspices without the approval of the Medical Information Bureau.

Resolution of the Council on the Death of Dr. Widal

The Council of The New York Academy of Medicine has learned with regret of the death of one of its Honorary Fellows, Dr. Georges Fernand Isidore Widal, who died in Paris on January 14, 1929. Dr. Widal was one of the most prominent medical practitioners in France and had made for himself a remarkable reputation by his reports on the more accurate diagnosis of typhoid fever and by his studies in pathogenesis of edema. Dr. Widal passed successively through the medical hierarchy of Paris, beginning first as intern, becoming a demonstrator of pathological anatomy and giving practical courses in bacteriology at the laboratory of Professor Cornil. Dr. Widal was Professor of Medicine at the Faculté of Paris until his death, and during this period was constantly at work at the Cochin Hospital. Dr. Widal's report on the diagnosis of typhoid fever by the Widal test in 1896, gave him world-wide fame. This work was supplemented by his determining the specificity of suppurative processes in typhoid fever. His work with Lemierre on the role of sodium chloride and the production of edema of nephritis and heart disease was also one of distinct value.

In view of the important services which Dr. Widal rendered to his profession and to the public, the Council of The New York Academy of Medicine records its sense of loss, and be it hereby

RESOLVED, that a copy of this minute be spread upon the minutes of the Council and published in the Bulletin of the Academy, and be it further

RESOLVED, that a copy of this minute and resolution be transmitted to the Academy of Medicine in Paris.

RECENT ACCESSIONS TO THE LIBRARY

Bailey, E. H. S. & Bailey, H. S. Food products; their source, chemistry and use.
3. ed., Phil., Blakiston, [1928], 563 p.

Berger, A. The principles and technique of the removal of teeth.
Brooklyn, Dental Items of Interest Pub. Co., 1929, 350 p.

Beyer, D. S. Industrial accident prevention.
3. ed., Boston, Houghton, 1928, 433 p.

Bolduan, C. F. Public health and hygiene.
Phil., Saunders, 1929, 312 p.

Borst, M. & Königsdörffer, H., Jr. Untersuchungen über Porphyrie.
Leipzig, Hirzel, 1929, 281 p.

Bramwell, J. M. Hypnotism; its history, practice and theory.
3. ed., London, Rider, 1921, 480 p.

Brooks, H. Angina pectoris.
N. Y., Harper, 1929, 164 p.

Burgess, M. A. Nurses, patients, and pocketbooks.
N. Y., 1928, 618 p.

Canton, E. Historia de la medicina en el Rio de la Plata.
Madrid, 1928, 6 v.

De Vecchi, P. A discourse on divorce and its shameful abuse.
N. Y., privately printed, 1928, 68 p.

Dodd, J. M. Autobiography of a surgeon.
N. Y., Neale, 1928, 323 p.

Eisendrath, D. N. & Rolnick, H. C. Text-book of urology.
Phil., Lippincott, [1928], 942 p.

Evans, C. H. Spinal anesthesia.
N. Y., Hoeber, 1929, 203 p.

Feelings and emotions. The Wittenberg symposium. Edited by M. L. Reymert.
Worcester, Clark Univ. Pr., 1928, 454 p.

Feer, E. The diagnosis of children's diseases.
2. ed., Phil., Lippincott, [1928], 551 p.

Fisher, I. Prohibition at its worst.
N. Y., Alcohol Information Committee, 1928, 358 p.

Gilchrist, H. L. A comparative study of world war casualties from gas and other weapons.
Wash., U. S. Gov. Pr. Off., 1928, 51 p.

Greenwood, (Sir) G. The law of death certification.
London, Milford, 1928, 83 p.

Groves, E. R. & Groves, G. H. Parents and children.
Phil., Lippincott, [1928], 196 p.

Hamer, (Sir) W. Epidemiology, old and new.
London, Paul, 1928, 180 p.

Hodgman, C. D. & Lange, N. A. Handbook of chemistry and physics.
Cleveland, Chem. Rubber Pub. Co., [1928], 1214 p.

Hoffman, F. L. Some problems of longevity.
Chic., Spectator, [1928], 180 p.

Jastrow, J. Keeping mentally fit.
N. Y., Greenberg, [1928], 297 p.

Jerman, E. C. Modern X-ray technic.
St. Paul, Bruce, 1928, 260 p.

Kennedy, E. Partial denture construction.
Brooklyn, Dental Items of Interest Pub. Co., 1928, 472 p.

Köhler, A. Röntgenology.
N. Y., Wood, 1928, 556 p.

Kossel, A. The protamines and histones.
London, Longmans, 1928, 107 p.

Kraemer, H. Kraemer's scientific and applied pharmacognosy.
3. ed., N. Y., Wiley, 1928, 893 p.

Little, M. E. & Kempton, R. T. A laboratory manual for comparative anatomy.
N. Y., Macmillan, 1928, 286 p.

Maranon, G. The climacteric.
St. Louis, Mosby, 1929, 425 p.

Marston, W. M. Emotions of normal people.
N. Y., Harcourt, 1928, 405 p.

Montague, J. F. The modern treatment of hemorrhoids.
2. ed., Phil., Lippincott, [1928], 298 p.

Morgan, T. H. The theory of the gene.
Rev. ed., New Haven, Yale Univ. Pr., 1928, 358 p.

Neustaedter, M. Textbook of clinical neurology.
Phil., Davis, 1929, 602 p.

Newman, (Sir) G. Citizenship and the survival of civilization.
New Haven, Yale Univ. Pr., 1928, 254 p.

Nordenskiöld, E. The history of biology.
N. Y., Knopf, 1928, 629 p.

Ottolengui, R. Table talks on dentistry.
Brooklyn, Dental Items of Interest Pub. Co., 1928, 488 p.

Pearse, A. S. & Hall, F. G. Homoiothermism.
N. Y., Wiley, 1928, 119 p.

Pruitt, M. C. Injection treatment of internal hemorrhoids.
St. Louis, Mosby, 1929, 137 p.

Raynes, F. W. Domestic sanitary engineering and plumbing.
3. ed., London, Longmans, 1928, 490 p.

Renaud, M. L'utilisation rationnelle du lait en thérapeutique.
Paris, Masson, 1928, 54 p.

Riddell, W. R. Hieronymus Fracastorius, and his poetical and prose works on syphilis.
Toronto, Candian Social Hygiene Council, 1928, 136 p.

Robinson, A. & Jamieson, E. B. Surface anatomy.
N. Y., Wood, 175 p.

Sanger, M. Motherhood in bondage.
N. Y., Brentano's, 1928, 446 p.

Schiff, F. Die Technik der Blutgruppenuntersuchung.
2. Aufl., Berlin, Springer, 1929, 91 p.

Souttar, H. S. The art of surgery.
London, Heinemann, 1929, 624 p.

Tanner, F. W. Practical bacteriology.
N. Y., Wiley, 1928, 235 p.

Walker, S. H. Social work and the training of social workers.
Chapel Hill, Univ. of N. C. Press, 1928, 241 p.

Warner, H. C. Prohibition, an adventure in freedom.
Westerville, O., World League Against Alcoholism, [1928], 265 p.

Wiggers, C. J. The pressure pulses in the cardiovascular system.
London, Longmans, 1928, 200 p.

Williams, J. F. Topical sources for "personal hygiene applied".
Phil., Saunders, 1929, 87 p.

PROCEEDINGS OF ACADEMY MEETINGS

MARCH

STATED MEETINGS

Thursday Evening, March 7, at 8:30 o'clock

Program presented in cooperation with the Section of Neurology and Psychiatry

ORDER

I. EXECUTIVE SESSION
Election of Fellows

II. PAPERS OF THE EVENING

a. The role of the medical expert in criminal trials, Foster Kennedy

b. Social danger of the borderline mental case, C. Floyd Haviland
Discussion, Hon. Cornelius F. Collins, Judge of the Court of General Sessions of the County of New York (by invitation), Hon. William McAdoo, Chief City Magistrate of the City of New York (by invitation), Frankwood E. Williams

III. EXECUTIVE SESSION—SECTION OF NEUROLOGY AND PSYCHIATRY
Appointment of Nominating Committee

Thursday Evening, March 21, at 8:30 o'clock

THE SIXTH HARVEY LECTURE

Calcium and phosphorus metabolism

JOSEPH C. AUB

Professor of Medicine, Harvard Medical School, Boston

Peyton Rous, President
Harvey Society

Philip D. McMaster, Secretary
Harvey Society

This lecture takes the place of the second Stated Meeting of the Academy for March.

SECTION MEETINGS

SECTION OF SURGERY

Friday Evening, March 1, at 8:30 o'clock

ORDER

I. READING OF THE MINUTES

II. PRESENTATION OF CASES
- a. 1. Reconstruction of the common duct
  2. Hodgkins disease of the stomach, Percy Klingenstein
- b. Lymphosarcoma of ileum, Willis M. Weeden
- c. Lymphosarcoma of ileum, motion picture, demonstrating case, Thomas H. Cherry
- d. Sarcoma of the stomach, Charles L. Gibson

III. PAPERS OF THE EVENING
- a. Some surgical problems in jaundiced patients, Morris Kellogg Smith
- b. Lymphosarcoma of the gastro-intestinal tract, Willis M. Weeden

IV. PRESENTATION OF INSTRUMENTS
Gabriel Wainschenker (Kiev, Russia), (by invitation)

V. EXECUTIVE SESSION
Appointment of Nominating Committee

SECTION OF DERMATOLOGY AND SYPHILIS

Tuesday Evening, March 5, at 7:45 o'clock
(Please note change of hour)

ORDER

I. PRESENTATION OF PATIENTS
- a. Cases from Mount Sinai Hospital
- b. Cases from City Hospital
- c. Miscellaneous Cases

II. DISCUSSION

III. Executive Session
Appointment of Nominating Committee

Section of Otology

Friday Evening, March 8, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of Cases

III. Papers of the Evening

a. Physiological and clinical observations in relation to pathological changes in the internal ear and central nervous system in the new born (with lantern slides), Prof. Antonin Precechtel, Charles University, Prague (by invitation)

IV. General Discussion

V. Executive Session
Appointment of Nominating Committee

Section of Historical and Cultural Medicine

Wednesday Evening, March 13, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Papers of the Evening

a. Portraits of Robert Willan, J. E. Lane

b. 1. The memorial tablet to Lady Mary Wortley Montague for her efforts to introduce inoculation for smallpox in the Litchfield Cathedral.

2. An old inoculation and vaccination box of the early 19th Century, C. N. B. Camac

c. The struggle against Latin in medicine—its effect upon French Surgery in the XVIth Century, Edward C. Streeter, Boston (by invitation)

Discussion by, Arnold C. Klebs, Nyon, Switzerland (by invitation)

d. Genesis of the Medical Department of the United States Army, Col. Edwin P. Wolfe, Medical Corps, U. S. A. (by invitation)

Discussion by, Col. Albert E. Truby, Medical Corps, U. S. A. (by invitation)

III. Executive Session
Appointment of Nominating Committee

Section of Pediatrics

Thursday Evening, March 14, at 8:30 o'clock

ORDER

I. Papers of the Evening

a. Determination of the value of sera in the treatment of meningococcus meningitis, Adolph G. DeSanctis, read by Irving S. Wright (by invitation), Adele E. Sheplar (by invitation)

b. Chemical studies of spinal fluid in meningitis, read by John A. Killian, Ph.D. (by invitation), Theresa Garcia, B.A. (by invitation)
Discussion, Roger H. Dennett, Augustus Wadsworth

c. Pathology of "Acute Pyelitis" in infancy, James R. Wilson (by invitation)

d. Persistent pyuria in infancy and childhood, read by John D. Lyttle, Pearl Summerfeldt (by invitation), Meredith F. Campbell
Discussion, Linnaeus E. La Fetra, Edwin Beer

II. EXECUTIVE SESSION
Appointment of Nominating Committee

SECTION OF ORTHOPEDIC SURGERY

Friday Evening, March 15, at 8:30 o'clock

ORDER

I. READING OF THE MINUTES

II. PRESENTATION OF APPARATUS

a. A new apparatus for the immobilization of the head and neck in fractures of the cervical spine (Lantern slides), Samuel S. Hanflig (by invitation)

III. PAPERS OF THE EVENING

a. A resumé of the osteochondritities, Joseph Buchman (by invitation)

b. Coxa plana—the course of the disease, Arthur T. Legg, Boston (by invitation)

IV. DISCUSSION
Percy W. Roberts, Benjamin P. Farrell, Leo Mayer, Alan DeF. Smith

V. GENERAL DISCUSSION

VI. EXECUTIVE SESSION
Appointment of Nominating Committee

SECTION OF OPHTHALMOLOGY

Monday Evening, March 18, at 8:30 o'clock

ORDER

I. READING OF THE MINUTES

II. CLINICAL CASES

III. DEMONSTRATION
Working model of eye muscles for teaching purposes, Wendell L. Hughes, discussed by J. W. Smith

IV. SOME PRACTICAL POINTS IN THE ADMINISTRATION OF TUBERCULIN
Else A. Barthel (by invitation), discussed by M. J. Schoenberg

V. PAPERS OF THE EVENING (9 p.m.)

a. The management of non-inflammatory glaucoma, including the results of treatment by injection of adrenalin and the use of glaucosan, Walter R. Parker, Detroit (by invitation), discussed by William Zentmayer, Arnold Knapp, Ernst Waldstein

b. The intravenous use of hypertonic solutions as a routine pre-operative measure in glaucoma, Robert K. Lambert (by invitation)
Discussion, Julius Wolff, Joseph H. Globus

VI. Executive Session

Appointment of Nominating Committee

Section of Medicine

Tuesday Evening, March 19, at 8:30 o'clock

ORDER

I. Papers of the Evening

a. The etiology of arteriosclerosis, Eli Moschcowitz

b. The dynamics of the circulation in essential hypertension and its bearing on therapeutics, Soma Weiss, Thorndike Memorial Laboratory, Boston City Hospital (by invitation)

II. Discussion

Lewis A. Conner, Emanuel Libman, Walter W. Palmer

III. Executive Session

Appointment of Nominating Committee

Section of Genito-Urinary Surgery

Wednesday Evening, March 20, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of Cases

a. Congenital cyst of urachus—lantern slides, Samuel Lubash (by invitation)

b. Tuberculous stricture of urethra, Paul W. Aschner

III. Papers of the Evening

a. The pathogenesis of renal tuberculosis, E. M. Medlar (by invitation)

b. The diagnosis and treatment of renal tuberculosis, Edwin Beer

IV. Executive Session

Appointment of Nominating Committee

Discussion of cases and papers is limited to Fellows of the Academy and specially invited guests.

Section of Obstetrics and Gynecology

Tuesday Evening, March 26, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Presentation of Cases

(From the clinic of the Woman's Hospital)

a. Dermatitis following packing with iodoform gauze, Nelson Sackett (by invitation)

b. Pregnancy complicated by amyotrophic lateral sclerosis, Arthur Murphy (by invitation)

Discussion, Asa Barnes Davis, George Arthur Blakeslee (by invitation), Hervey C. Williamson

III. Paper of the Evening

Observations on the results obtained in the treatment of sterility, Brooke M. Anspach (by invitation)

Discussion, Robert L. Dickinson, Isidor C. Rubin, Wm. Hollenback Cary (by invitation)

IV. General Discussion

V. Executive Session
Appointment of Nominating Committee

The discussion of papers and cases is limited to Fellows of the Academy and specially invited guests

Section of Laryngology and Rhinology

Wednesday Evening, March 27, at 8:00 o'clock
(Please note change of hour)

ORDER

Medical Center and Polyclinic Hospital Night

I. Reading of the Minutes

II. Presentation of Cases

a. Giant cell sarcoma of mandible

b. Plastic repair of cheek, nose, mandible and superior maxillary bone

c. Plastic repair of ala of nose

d. Unilocular cyst of mandible

e. Rhinoplasty

f. Bone graft of mandible for recurrent adamantinoma, Henry Sage Dunning, Douglas Burnett Parker (by invitation)

III. Report of Cases

a. Exophthalmos due to chronic abscess of orbit and chromic frontal sinusitis, Cornelius G. Coakley

b. Recurrent tracheal stricture, John D. Kernan

c. Recurrent polypi of maxillary sinus in a boy of eight years, James W. Babcock

d. Dilactation of esophagus with spasmodic stricture, George H. Brighton (by invitation)

e. Composite tumor of pharynx

f. Lymphosarcoma of tonsil, George V. Browne (by invitation)

g. Report of 7 cases of nasal accessory sinus disease, Lee M. Hurd
Discussion, S. Fineman

IV. Presentation
Anatomical specimens, Harry Neivert (by invitation)

V. Paper of the Evening
A new method of visual instruction. The use of still films in place of lantern slides, William W. Morrison

VI. Executive Session
Appointment of Nominating Committee

FELLOWS ELECTED MARCH 7, 1929

Henry Charles Barkhorn.....45 Johnson Avenue, Newark, N. J.
Pol. N. Coryllos.....48 East 75th Street
Raymond Emory Meek.....30 East 40th Street
Milton Joseph Raisbeck.....310 West 85th Street
G. Canby Robinson.....477 First Avenue

DEATHS OF FELLOWS OF THE ACADEMY

Ernst Hermann Arnold, M.D., 1460 Chapel Street, New Haven, Connecticut; graduated in medicine from Yale University, New Haven, Connecticut, in 1894; elected a Fellow of the Academy December 6, 1906; died March 9, 1929. Dr. Arnold was Chief Orthopedic Surgeon to the Griffin Hospital, Derby; to the Grace Hospital, this city, and was Chief of the Orthopedic Dispensary, New Haven.

Abram Schuyler Clark, M.D., 614 Park Avenue, New York City; graduated in medicine from the College of Physicians and Surgeons, New York City, in 1899; elected a Fellow of the Academy February 7, 1907; died, March 22, 1929. Dr. Clark was a Fellow of the American Medical Association, a member of the New York Dermatological Society, Visiting Physician to the Skin and Cancer Hospital, Consulting Dermatologist to Roosevelt Hospital, Hospital for the Ruptured and Crippled, Post Graduate Hospital, Lincoln Hospital, Beekman Street Hospital, St. Peter's General Hospital of New Brunswick and All Souls' Hospital, Morristown, New Jersey.

OTTO GLOGAU, M.D., 1130 Park Avenue, New York City; graduated in medicine from the University of Vienna, Vienna, Austria, in 1900; elected a Fellow of the Academy January 4, 1912; died, March 8, 1929. Dr. Glogau was a Fellow of the American Medical Association, a member of the American Academy of Ophthalmology and Oto-Laryngology and a member of the Oto-Laryngology Committee.

ORREN AUGUSTUS GORTON, M.D., West Hill, Sherburne, New York; graduated in medicine from New York University, New York City, in 1877; elected a Fellow of the Academy April 7, 1881; died, March 15, 1929.

WILLIAM BENJAMIN WOOD, M.D., 5893 Beacon Street, Pittsburgh, Pennsylvania; graduated in medicine from New York University, New York City, in 1881; elected a Fellow of the Academy June 4, 1885; died, March 16, 1929. Dr. Wood was a Fellow of the American Medical Association.

DATES OF ACADEMY MEETINGS

STATED MEETINGS

1st and 3rd Thursdays.

SECTION MEETINGS

Dermatology and Syphilis, 1st Tuesday.
Surgery, 1st Friday.
Neurology and Psychiatry, 2nd Tuesday.
Pediatrics, 2nd Thursday.
Otology, 2nd Friday.
Ophthalmology, 3rd Monday.
Medicine, 3rd Tuesday.
Genito-Urinary Surgery, 3rd Wednesday.
Orthopedic Surgery, 3rd Friday.
Obstetrics and Gynecology, 4th Tuesday.
Laryngology and Rhinology, 4th Wednesday.
Historical and Cultural Medicine, 2nd Wednesday of November, January, March and May.

TRUSTEES, COUNCIL AND COMMITTEE MEETINGS

Trustees, 4th Wednesday.
Council, 4th Wednesday.
Committee on Admission, 1st Wednesday.
Committee on Library, 2nd Tuesday.
Public Health Relations Committee, Mondays.
Committee on Medical Education, 2nd Thursday.
Committee on International Medical Relations, 3rd Wednesday.

DONATIONS TO THE LIBRARY FUNDS

Donations and bequests are solicited by The New York Academy of Medicine for the maintenance and expansion of the Library.

A donation or bequest of $5,000 or more will provide for a special library fund, the income of which may be used for the general purposes of the Library or restricted to the purchase of books and periodicals, as the donor or testator may indicate.

FORM OF BEQUESTS

The following is a brief legal form as a suggestion under which bequests may be made in behalf of the Academy:

I give, devise and bequeath unto "The New York Academy of Medicine" of the City of New York, State of New York, a corporation duly incorporated by the Legislature of the State of New York by an act entitled, "An Act to Incorporate The New York Academy of Medicine," passed June 23, 1851, and amended June 4, 1853, June 2, 1877, and April 24, 1925,.....